UNIVERSITY OF CALIFORNIA
MUSEUM OF VERTEBRATE ZOOLOGY

# BIRD NOTES

from

40 Selborne Drive

Piedmont, California

1933 to 1939

by

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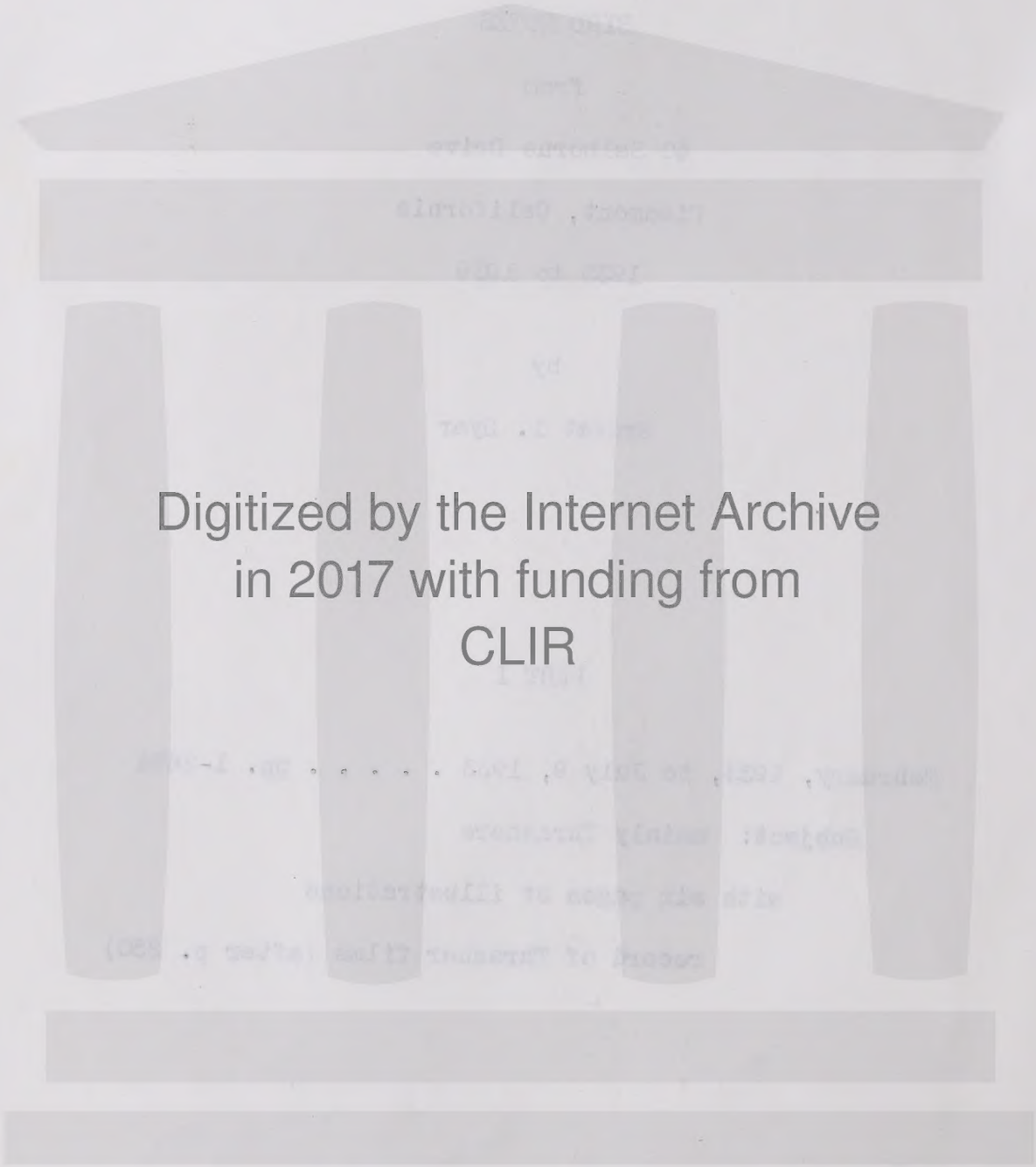
## PART I

February, 1933, to July 9, 1933 . . . . . pp. 1-265A

**Subject:** mainly Thrashers

with six pages of illustrations

record of Thrasher films (after p. 250)



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# Notes on Thrashers
at
40 Selborne Drive
Piedmont, California.

Feb. 1933

Topography of habitat. The house at this place occupies the top of a rocky spur having its principal axis running practically east and west. The spur projects from somewhat higher hills to the east and is virtually exposed to all points of the compass. The property is roughly elliptical in outlines with a major axis approximately 500 feet long and minor axis of about 190 feet. The major axis is along the crest of the spur, so that the ground falls off sharply in all directions, except to the east where it forms a saddle where the ridge connects with the higher hills.

To the west is a canyon.(Indian Gulch originally, but now bearing the hybridized sophistico-aesthetico commercialized name of Trestle Glen imposed upon it about 40 years ago by a street railway organization anxious to efface all pioneer crudities in its newly awakened civic consciousness,and incidentally,attract picnicers to the terminus of the railway leading into the canyon).

Location. The spur projects out into this canyon like a peninsula and overlooks practically all of San Francisco Bay to the north, west and south, from Richmond to San Jose and all of the cities and towns between. Its Elevation. elevation is somewhat more than 500 feet above sea level. The latitude Lat. and Long. is approximately 37 degrees 48 minutes N.; longitude about 122 degrees 13 minutes W. There is a difference in elevation between the highest and lowest points on the property of about 55 feet.

When the property was acquired it was inaccessible except by trail. There were no streets nearer than a quarter of a mile from its center, although there was a seldom used road about half as far away.

Natural growth. Except for a few open spaces, the entire top and western slope and the upper portion of the southern slope were covered with a dense growth of live oak (mostly stunted and gnarled through aridity and shallowness of soil) California laurel, hazel, poison oak, toyon, coyote brush (Baccharis), gooseberry, currant, old man (California Coast Sage), monkey flower, cascara (Rhamnus Californica) and Monterey pines along the northern boundary. The pines were planted there, probably about 30 years ago, as they are not native to this section.

The smaller growth consisted of bracken, naturalized broom, snow berry, yerba buena, strawberry, shooting stars (Dodecatheon), hound's tongue, fritillaria, blue-eyed grass, rein orchid, pimpernel (some of which were blue), poppies, brodiaea capitata, harvest brodiaea, immense quantities of soap plant (Amole, chlorogalum, furnishing an important fiber for birds' nests), pussy paws, columbine, blackberry, mustard, wild radish, deer-weed (hosackia), bush lupine, wild pea, wild hollyhock(checker-bloom), mule's ears, honeysuckle, golden eggs (Oenothera ovata), wood-fern, golden-backed fern. and brake.

The pines are perhaps 40 or 50 feet high. The oaks in the thickets 15 to 20 feet. A few more or less isolated oaks are from 25 to 30 feet high where growing conditions --although still unfavorable-- The old oak are a little better. These have spreads of about 20 or 30 feet. One very old oak, slowly dying and now shorn of most of its branches is about 3 feet in diameter and must have had a spread of 50 or 60 feet at one time. At present it has a dense growth about the trunk reaching up about 10 or 15 feet and a few stubs of branches a foot or two in diameter The glade which are dying. It is growing out of a rocky bank and overhangs a miniature glade bounded by an irregular circle of smaller oaks that evidently grew from acorns of the old tree, as their position shows. The interior of this glade has been left in its wild state and now (February 1933) forms the principal haunt of the thrashers.

Before beginning building operations late in 1926 a small shack 8 feet by 10 feet was put up near the highest point of the property.

This was used to house surveying and drawing instruments and various tools; also as shelter in planning the general layout while studying the direction and intensity of winds, etc., views to be conserved, position of the sun a t various seasons and so forth.

Wrens and titmice.

( Late one afternoon at the beginning of winter a scratching was heard (about the eaves of the shack. Investigation showed that it was a Vigors (wren looking for shelter. A house was made as quickly as possible and (put up under the eaves and every night thereafter until nesting time at (least one wren occupied the house, only to be dispossessed by the plain (titmouse in Spring. Every Spring since then this bird has reared a (family in this house although it had to be transferred to a tree when (the shack was torn down . This bird house is now the oldest occupied house (of any kind in this section of Piedmont. The titmice were occupying it (when it was moved (about 10 feet) and for about a day they could not find (it, <u>frequently hovering in the air at the vacant space where it had been</u>.

First Thrasher seen. Eats bread

While working in the shack one day I heard a low, continuous warbling near the door, and looking out saw a thrasher (California Thrasher, <u>Toxostoma redivivum</u>--responsible for these notes being kept) digging in the rocky ground about 10 feet away. As soon as it saw me it ran off about 10 feet further and I tossed it a piece of bread from my lunch and, much to my astonishment, it came running back to get it. This was the first time I had any inkling that the thrasher, despite its habit of skulking about the bushes and its reputed shyness might not be so fearful of human beings as is generally supposed. Also it was the first intimation that this oak-clad spur might be thrasher territory. although I had occasionally heard them singing in the thickly wooded canyon below. This was the first thrasher I had seen here and it will be noted that it accepted food the first time it was offered.

In building the house the wild growth has been spared as much as possible and consideration was given from the first to the welfare of the feathered inhabitants and visitors by providing food and water and preserving cover. It is believed that the local bird population is now far in excess of what it was when I came on the scene.

Disturbing factors.

During the next few months building operations on the property with steam shovels, trucks, grading, blasting, poison oak grubbing in the thickets, doctoring trees, hammering, sawing and burning rubbish made the place unattractive to birds. In addition also they commenced laying out and grading streets in the surrounding property with all the noise making appliances peculiar to such operations. Blasts were set off that threw rocks more than 100 yards away as far as this place. (Poor shooting). Immense piles of brush were burned. The police came into the newly opened territory to practice pistol shooting; small boys came with air-guns and traps; motorists invaded the woods to loot the wild growth; other houses were being built; salesmen with "prospects" prowled everywhere and for months there was no semblance of peace in any direction. Bird life, except for gulls and jays, coming to eat the remnants of workmens' lunches was scarce, although a thrasher would occasionally perch on the point of a roof and sing a few notes.

Odd combinations

Thrasher eats chicken feed

I kept "scratch feed" out for the quail and got some extraordinary combinations feedingtogether all at the same time, such as quail, junco, jack-rabbit, brown towhee, cotton-tail rabbit and Nuttall sparrow. In the spring of 1927 an adult thrasher and a youngster, apparently full grown, discovered the scratch feed and the adult started feeding the young bird with grains of wheat and cracked corn. The adult would pick up a kernel, go to the youngster, make a deep bow which was politely returned and thrust it down the throat of his offspring. This was repeated many times in exactly the same way, the youngster continually edging away until it was 50 feet or more from the source of supply, thus necessitat-

frequent trips back and forth by the parent with one seed at a time. Finally they disappeared into the bushes.

Lawn digging by thrashers

Shortly after this the tract to the north of this place underwent the same operation as the one to the south, so that noise and confusion continued for many months longer. Also I was too busy myself to observe the birds much. As soon as I got a small lawn well along I began to notice small conical holes in it an inch or two deep with the largest diameter about the same. At first this was thought to be the work of flickers who had occasionally worked on this lawn, but one morning a thrasher was seen making vertical strokes with its bill followed by powerful side-sweeping movements to each side, throwing earth and roots several feet away. In later years it was noted that these depredations began about the time when the surrounding country was getting pretty well dried up and that they were confined to moist places and lawns.

Eats cut-worms

Until the autumn of 1931, as indicated by a few casual notes made at the time, thrashers were only occasionally seen in my garden, although it must be said that I was not really looking for them. They then damaged very badly a small moss lawn on which I had bestowed considerable care, in pursuit of cutworms as I discovered by placing electrodes in the moss-patch and driving the worms out. However, I did nothing about it as the attacks were not renewed.

More digging

In July 1932 a thrasher began to appear quite frequently in the shrubbery, and occasionally doing a little digging in the lawn. Some time in September digging was started in earnest and one morning I found more than 90 fresh holes in a small oval lawn about 15 feet by 25 feet. Earth and roots had been scattered all over.

Oval lawn

Focus of garden

This lawn is surrounded for about two thirds of its periphery by trees and shrubbery, with a driveway along the open side towards the house. It is virtually the focal point of the garden and a gathering place for birds, as a few feeding stations are maintained there, and it is well protected. The house is laid out on a level 8 or 10 feet higher with an open sided court or patio, also containing oaks and shrubbery and another small lawn, facing the oval lawn. There are also in this court various small pools, bathing and feeding places and it is protected from all but southerly winds. It has both sunny and shady places at all times when the sun is shining and has become quite popular with the birds. At favorable times I have seen as many as 15 or 20 different kinds of birds in it in the space of a half hour. (July 4th. 1929, 12M. to 12:30 P.M., an unfavorable hour usually, 22 different kinds).

Thrasher gets bolder

I had occasionally thrown bits of bread to this thrasher and, after retreating into the bushes at first, he would sometimes come out, take the bread hurriedly and run off with it into the bushes.

Finally he got bolder and bolder, at last coming out openly to dig in my grass plot in my presence.

Decide to bribe him

I decided at last to see if I could not bribe him to let the grass alone. So at the point where he most frequently came out of the shrubbery, I placed a little stand about six inches by ten inches and about 18 inches high from the ground. This had around it a raised

The Oval Lawn
(Sept.24th.,1932 )
and vicinity.

Abyssinian Banana (Musa ensete)at the pool near the Oval lawn, Feb. 24th., 1932.

edge, forming a shallow box about 2 inches deep. The inside dimensions corresponded with those of a certain tin box, easily obtainable, which served as a mould in which cakes of suet and scratch-feed could be cast of standard size. Over this was placed a movable cover of half inch mesh wire screen to keep the jays and ground squirrels from carrying off the cakes.[1] (See p 215A for photo) Much to my delight the thrasher found this almost as soon as my back was turned, and on the 22nd. of September (1932), appeared there with a mate. Both of them have been here continuously ever since. ( Feb.22, 1933) and almost at once ceased bothering the small grass plot; although they continue to dig elsewhere as vigorously as ever.

A mate arrives.

Digging in lawn stops.

Within less than a week after I had made their special feeding station, I put my chair along-side of it, one day, to see how they would react to my presence. In a few minutes one of them appeared, ate from the stand, and, on leaving, walked under my chair with little concern. They are, however, much afraid of hawks and are constantly looking up into the sky for them when in the open.

Walk under my chair.

Fear of hawks.

Unfortunately their fears are justified, as this place is frequently raided by Cooper and Sharpshinned Hawks, even within a few feet of me; on one occasion, in fact, one flew into my face so that both had to dodge. One day, while sitting with my gun waiting for the return of a sharp-shin that had just raided the bushes about the lawn within 25 feet of me, a ground squirrel came out from the bushes and paused under a pyracantha (Pyracantha Yunnanensis) and paused. In a ceanothus (Ceanothus thyrsiflorus) ten feet to the right of him was one of the thrashers, and fifty feet to my right, was the other, digging in the road. This seemed a good time to test the reaction of the birds to a sudden, loud noise, so I shot the squirrel. The thrasher nearest him moved not more than a foot or so and remained perched quietly; the one in the road immediately came running <u>toward me</u>, then

Reaction to loud noises.

Note - Jan 14, 1937. Thrasher ... the other ... was by ...

Examines dead squirrel.

turned and ran over to the dead squirrel, circled about him at a distance of 2 or 3 feet for about 3 minutes, inspecting him with great apparent curiosity. He wanted to go closer and would start toward the squirrel but draw back again. He then began digging operations a few feet away, pausing now and then to go over and have another look at the squirrel. Aside from a slight start when the shot-gun was discharged, neither bird showed any sign of fear ( though it was manifestly impossible to see all three creatures at the same time) and did not seem to connect me in any way unfavorably either with the noise or the collapse of the squirrel--in fact, as noted, one ran directly toward the source of the sound.

Food. Angle-worms rejected

I had assumed that the thrashers were interested in angle- and cut-worms in the lawn and, while this proved to be true, it was noted that they frequently dig up one angle worm after another, laying each carefully by the side of the hole and then proceed to the next location without eating any of them. Again I have seen them occasionally eat one of the angle worms, usually a small one. In a small patch of "Scotch moss" (Arenaria caespitosa) it is cut worms that they get.

I have seen an angle worm come up voluntarily directly under the foot of a thrasher and the bird, feeling it there, reached down and scraped it aside with its bill impatiently and paid no further attention to it. I do not know yet, from my own observations, what constitutes the principal fare of these birds. They are evidently ground feeders almost exclusively. In the suet mixture, they eat both the suet and the corn and wheat which it contains.

Singing while digging.

They often sing a low, continuous and soft song to themselves while digging, without appearing to open their bills. It is extremely varied and ventriloquial in character, containing at times, mixed with the thrasher's own phrases, softened adaptations from the quail, flicker, California Jay, robin and either the Ruby-crowned Kinglet or one of the vireos. (Which not yet determined).

Ventriloquism

Mimicry

Often the song appears to keep time with the digging and is sometimes accented when about to turn over a stone larger than usual. At other times it is so continuous that one would not know that the bird was digging. Often the pulsation of the throat is all that reveals the identity of the singer. Both birds sing in this way.

Both are singers.

Making friends with them.

As the birds became more friendly, I thought I would try to get into closer touch with them, so I got a supply of meal-worms from Mr. Brock and tried tossing them to the thrashers one at a time. Shortly the tamer one would come to get them within 15 or 20 feet of me. I then gradually dropped them nearer to myself until this one would take a worm within an inch or two ~~from~~ the tips of my fingers where my outstretched hand lay on the ground, then run off. Gradually it would not retreat so far or so fast. Then I tried spreading my fingers, placing a worm between them on the ground and another worm in the palm of my hand. Finally she,* for I think it was the female, would take the worm from between my fingers, but not the one on my palm. All this time the bird would keep an anxious lookout for hawks, as I was 10 or 15 feet from the bushes in the open. Little further progress toward getting the birds to eat from the hand was made for days, although by December, 1932, they would come out of the bushes wherever they might be, when called, almost any time and run to me for worms. Sometimes they would come from a distance as great as 75 yards in response to call, my first intimation of their location often being on hearing them answer me from their place of concealment. I arranged to carry with me a small round tin box of meal worms, so that I would always be prepared to feed the thrashers whenever they came and not disappoint them. It soon became evident that the nearer I was to a brushy place, the more readily the birds would come for worms and the longer they would stay with me, on account of their lessened fear of being caught by hawks.

Coming to call.

The worm box.

First worm taken from hand.

At last, on Jan. 23rd., 1933, the female took a worm from my hand,

*It was the male, Pyrrhuloxia

the male looking on from a yard or so distant. (I am only guessing at the sexes). See Appendix A, Note j.

) Increasing confidence. I had long before reached the conclusion that they were little afraid of me, and were more afraid of the open where the hawks could see them. Certainly they are more afraid of these birds than of me, for I have had them take refuge under a bush at my elbow on seeing a hawk pass overhead or sit in a nearby tree. From the first they have not hesitated to turn their backs on me and dig, no matter how close I might be, and have done this for minutes at a time. They now (Feb.) "talk" to me at times and sometimes look me up if I do not take the initiative.

Talk to me.

Since Jan. 23rd. the tamer one has never refused to take worms from my hand if hungry, often running to reach me, and sliding if on a bank, and bringing down a small avalanche.

The "Chaparral". Along the street frontage of this place there is a high sloping bank, as high as 12 feet in places. I have planted this with shrubs and trees that require little moisture and in places it is like a dense chaparral. Although this is not strictly the proper designation for this growth, it will be referred to as such in these notes, as the name has become fixed locally. There is a wire fence along the top of the bank covered with roses and honeysuckle principally. The exposure is to the south and the thrashers love to lurk here in concealment. They can just squeeze through the mesh, but if there is a twig in the way, they have to move it to one side with their bills; usually it will flop back again several times before the bird can get through.

Reaction to obstructions. As a rule they are so very patient and persistent in their attacks on it that the effect is comical. Sometimes they get angry with it , give it a few hard pecks and then climb over the fence after all to get the proffered worm.

Good runners. They do not like to fly, much preferring to run. They are capable of considerable speed on the ground, and when running, look like small road-runners.

They also resemble that bird when part running and part flying along the ground. If they have a hundred feet or so to go, they usually run most of the distance; flying only when there are open spaces to cross. Open spaces they do not like.

Small wings

Their wings look ridiculously small in comparison with the size of the bird itself, and when they are near me, they often preen and polish their feathers by drawing them individually through their bills, pushing out one wing at a time by using their feet, as many birds do. At such times their wings appear short and rounded.

Behavior

The female, in getting better acquainted with me, at first tried an exploratory peck or two at my hand to see what it was made of and, once or twice, took the end of a finger in her bill, gave a little pull, dropped it, then backed away looking up into my face to see how I was taking it. Humming birds, I have often noticed as one approaches them, are inclined to look at ones feet as the sophisticated pedestrian looks at the front wheels of an automobile in order to anticipate the driver's intentions; but these thrashers are like a dog and look into ones face as if trying to read ones mind.

Playfulness

They are quite playful, pull each other's tails without animus, play peek-a-boo on opposite sides of a tree trunk or hedge and run

Carrying objects

around with pices of paper, leaves or twigs, even out of the nesting season. On the edge of the oval lawn nearest the bushes I have to lay coarse wire screen to keep the Gambel (Nuttall?) sparrows from

Teasing

pulling up the grass in the winter. Although the screen lies close to the ground, the thrashers occasionally crawl under it, seemingly only in the spirit of adventure, as the space is so limited that they can not use their bills and have to flatten themselves out like moles. If one sees the other under there the temptation for the outsider to have some fun at the expense of the insider is often too great to be resisted, and he will walk on top of him and peck him--not too hard--until he squeaks and crawls out; but that ends it and there seem to

be no hard feelings resulting.

The female will take several worms from me with the standoffish male looking on and, sometimes, will go to him and give him one.

She will sometimes hold a meal-worm crosswise in her bill and start digging while still holding the worm, seemingly puzzled to know what to do with it. Once after she had had all she wanted herself, she carried two away and wandered about with them for a minute or two until I called her back to me and offered her still another. She considered this difficult problem for several seconds, then gulped down the two in her bill as the best solution of making room for the one in my hand.

surprising response

One of my brothers was visiting me earlyin February . I had told him that the thrashers would come when called, perhaps being a little too definite in my enthusiasm. In the early morning we went out to put the matter to test. I did not know where they were at the time and had not been out in the garden since the day before, so was a little shaky. We went into the "orchard" and on my first call, there was a loud full throated answer from the bushes nearby--several phrases of full song--(this had never happened before!) followed by a great rustling in the trees and bushes; one bird came running and flying from one direction and the other from another and both came sliding down the bank accompanied by a shower of pebbles. Even I was startled, as they had never shown such enthusiasm before, and I had been fearful that they might not live up to my earlier boasting, which now seemed modest when compared with the actual performance.

Shy before strangers

They are somewhat constrained in the presence of strangers, yet some of their best showings of confidence have been made with strangers present and in the open where they do not like to come.

A test of courage

Thus, three of us were sitting across the driveway from the oval lawn on the steps leading up to the house. They had not seen either

visitor before. The thrashers appeared among the bushes at the far side of the lawn 25 or 30 feet away. The intervening space is one of those that they most dislike to cross, as it is subject to hawk raids. The Sharp-shins occasionally hide in the surrounding bushes and trees and the thrashers seldom venture across it without previous careful inspection and then only with obvious trepidation. Consequently I usually do not put them to this test.+ However, my friends were naturally curious to see what would happen if I tried to get the birds to come and although it usually takes a lot of coaxing to get them to traverse this particular region, the female came immediately and without hesitation when I attracted her attention, walked calmly underneath the feet of one man, who had his legs crossed and took the worm from my hand.

On Feb. 11th. she took a worm from Mr. Sampson the first time he had ever tried to interest her, although he had on a shiny slicker of which she was somewhat suspicious. She had, however, seen him with me a number of times before.

Food eaten — On Feb. 12th., I tried her out on the food which is given to caged soft-billed birds (Grissel' food?) and the adult beetles of which the meal worm is the larva; both of these she took readily. Worms are swallowed whole, but beetles are hammered on the ground first.

Nesting signs? — About this time the thrashers began to show increased interest in twigs, and once or twice were seen to run up into the old oak with them and disappear amongst the thick foliage. I looked, but found nothing

New behavior — On Feb. 18th., Mr. Sampson and I looked for them in the glade and found them up in the old oak--an unusual place for them. They came down for worms, returning immediately to the tree. New behavior.

February 19th.

About 8 A.M. I went out to have a good look into the thick foliage

+ Ap. A - Note 2.

foliage at the base of the tree. As I stood there, seeing no evidence of the presence of the birds, the female dropped quietly out of the foliage at my feet and looked up at me. She then took worms from my hand. I went to the house to get more worms and soft-food for her. The latter she ate from my hand with no sign of fear whatever, just like a chicken eating out of a dish. This took several minutes; then she gave me one good peck, backed off, looked up into my face and began at once to pick up twigs near me, carrying them up into the tree about 4 or 5 feet higher than the top of the bank, about 10 feet above the floor of the glade, which the branches overhang. There were perhaps 5 or 6 twigs already in the "nest". She was soon joined by the male who carried up perhaps one twig to her five or six; at intervals she would come over to me for more food, then back to work. During this time I was sitting on the ground about 8 feet horizontally from the nest and about 4 feet below it; so my eyes were about 8 feet from it. The birds showed no nervousness whatever at my presence and made no attempt at secretiveness. The male would come within 3 or 4 feet of me, take worms tossed to him and "talk" to me, but would not come nearer. They worked casually and spasmodically, sometimes leaving it for hours at a time. I soon discovered that when they were not working, they would go back on the job again if I gave them food, even when they were as much as 200 feet from the nest when I fed them.

Playful peck

Building commenced

No secretiveness

Soft food

Feb. 21st.

First physical contact

For the first time the female stepped on my hand while feeding, without seeming to notice that the act was unusual. She stood with one foot on the ground and one on my hand.

Building operation

The twigs selected are sometimes as long as 18 inches. So far the birds invariably climb up from the ground, and for the first few days worked from below the nest, placing the twigs as high above their heads as they could reach, moving them about until placed to their satisfaction.

The longer twigs, particularly the forked ones, cause quite a bit of trouble by catching on the small branches of the oak, and are sometimes dropped to the ground, but nearly always picked up again. I tried to see if the female would take one from me and use it, but while she came over and looked at it, she was much more interested in finding out whether I had anything for her to eat. I believe that if I had just the twig that she needed at the moment, and caught her in the right mood, she would take it.

As the nest grows, they begin to get on top of it, standing near the middle and placing twigs around the circumference. Sometimes both birds are on top at the same time.

Male hands twig to mate

Today Mr. Sampson saw one of the birds "hand" a twig to the other, the second bird placing it. Later this was repeated.

February 22nd.

at) Resume work when fed.

They were not working on the nest when I went out this morning, but were digging in various places not far away. I gave the male meal-worms and the female meal-worms and soft food which she ate from my hand. The male is still standoffish. After this work on the nest was resumed at once, but not prosecuted with much vigor and they loafed a good deal during the forenoon.

All birds "frozen".

After luncheon I went out to watch them work, but they were not there and I could not find them anywhere. They would neither answer nor come to call. At last I noticed that all of the other birds were scarce and all I saw were frozen, so that I could get within a few feet of any bird that I might see without its moving, if I approached carefully. This was true of Gambel and Song sparrows, Quail, Juncos, Hermit thrushes and to a lesser extent of California jays.

) Hawk.

This meant hawks. I soon located a Sharp-shin, but could not get a bead on him. When he left, the birds began to thaw and I found the thrashers at last under a pyracantha, very meek. They would talk to

Back to work. me, but would not come out until they were sure that the hawk was gone, as evidenced by the awakening activities of the other kinds of birds. I then gave them both food and, following what now seems to be established precedent, as soon as they had finished, they went back to the nest 60 yards away and resumed their building operations.

Shaping nest. They have begun shaping the nest now with their bodies. They worked quite energetically during the half hour I watched them, then I left. Returning after another half hour, they were still at it, but the female came down at once without being enticed by me in any way and approached me for food, then back to work again. A few minutes after this, I was out in the open and she came for more food, running from bush to bush, keeping an eye open for hawks, returning to work again after eating.

Stop for food.

February 23rd.

Materials used. At 9 A.M. the birds were not working, but soon appeared and both began carrying material to the nest, both doing about the same amount of work. They are now using much smaller twigs; mostly oak which they find conveniently at hand under the old oak; some, however, they break off of the sage brush. They are also now carrying up loose fibre from the soap-root bulbs. I cut up some rope yarn to see if I could interest them, but they were very busy and paid no attention to me or my offerings.

Nest with rope yarn. About 11 o'clock work slackened and they began to show more interest in their surroundings. In the presence of Mr. Sampson I offered the female some rope yarn, but she inspected it only as a possible source of food. I then held a meal-worm with the yarn, and, in getting the worm, the yarn went with it and she ran off evidently in surprise, but dropped the yarn when she swallowed the worm, showing no further interest in it, although she wanted nesting material at the time as proved by her going immediately to a sage to break off fine twigs.

Fox Sparrow also sings and digs.

(While watching the thrashers I heard a song, new to me, coming from the bank south of the glade, outside the fence, in the "chaparral". It proved to be a Fox Sparrow singing while scratching in his peculiar rocking-horse fashion. It was directly below me, practically at my feet, but continued its scratching and singing with occasional glances up at me. Evidently the thrasher is not the only bird that digs and sings at the same time, although it never scratches the earth with its feet). (Still true - Feb. 10/34) Note May 12, 1938

The Glade.

The glade is roughly circular, about 50 or 60 feet in diameter, enclosed by a sloping bank on the north and west about 6 feet high, with small oaks surrounding it on all sides except for a narrow gap at the south. The old oak is at the top of the bank on the north side of the depression forming the glade. The south rim of the glade terminates at the crest of the 10 foot bank that slopes down to the sidewalk. It is a miniature bowl or amphitheatre set in the side of a slope. The floor is of loam in which grow baccharis, sage and mimulus (Diplacus), and is strewn with pieces of bark and rotting wood from the old oak. This morning it was being used by quail, towhees (2 kinds) and rabbits, all in harmony.

The nest.

The nest is now a loose, bowl-shaped affair, perhaps 15 or 16 inches in mean diameter and about 9 inches in height overall. There is no appreciable lining in it as yet. (11:40 A.M.) It can be seen through in all directions. There are occasional strong winds here.

Windy location.

The trunk of the old oak will protect the nest from the north, but it looks as if the Sou'easters would strike it freely.

Loafing.

Both birds loafed in the chaparral most of the afternoon. Evidently there is no need for haste.

Relative sizes.

[illegible] date. He is much more timid than his mate and appears slightly smaller. I wonder if I have the sexes reversed. (They were! - Feb 10/34)

Eye color differs.

So far I have only guessed at the sexes. "His" eyes appear to be different in color from his mates. Hers are brown with a bright orange tinge; his are brown with a greenish-slaty tinge, i.e. cold. while hers are warm. If this difference in the eyes is correct, and I have no reason to doubt it, it is the only constant difference I have been able to detect between these two birds as yet.

February 24th.

Female sits in nest.

I went to the nest at 8:30 A.M.; the"female"was sitting in it with only her head and tail showing, doing nothing. I said to her in an ordinary conversational tone: "Hullo, Mrs.", without indicating in any way that I might have something for her to eat. She immediately popped out of the nest and came trotting over to me, looking up at me inquiringly. I then sat on my heels and put one meal-worm after another in the palm of my hand for her. While eating these she noticed that the top of a soap-root bulb was showing above the ground and began to tear the fibrous coating off of it and carried it to the nest.

Tears fibre from soap-root.

In the meantime the other bird had poked his head up over the bank about 3 feet from my hand, and, seeing what was going on, came forward eagerly to join his mate, but suddenly remembered that his dignity would be compromised, or something, so paused. I tossed him a worm which happened to land in amongst some rope yarn that I had placed there, thus inadvertently calling his attention to the yarn. To get the worm he had to reach into the yarn and in this way a few fibres got into his bill. He swallowed the worm and then hesitated about what disposition to make of the fibre. He had seen it many times before and had as often rejected it, also there were worms to be had without effort. There can be little doubt that the general configuration of things , as judged by his actions, puzzled him. I would like to think that he reasoned about it; perhaps he did. In any case, the dilemma was solved by his taking the rope up to the nest

Male tricked into using rope yarn.

and carefully placing it inside. A half hour later when I returned he was shaping the inside with his bill and body.

Dainty feeding habit. In taking soft-food from the hand, the female does so with the utmost delicacy and daintiness. There is no hasty scrambling and hurried gulping at all, and no throwing it about. It is in the form of a loose, somewhat coarse powder and must offer a great temptation for gorging and messing about. She will occasionally make a typical thrasher side-sweep with her bill, but it is restrained and she will pick up all the crumbs which are spilled upon the ground in this way, one at a time, before going back to the heap in my hand. Her pecking at the food is done with such gentleness and precision that it is almost impossible to feel any impact of her bill. She can pick a minute grain off of my hand without touching the skin.

I tried placing a meal-worm on my sleeve where the most convenient way for her to get it would be for her to walk across my hand and up my arm. She did this without hesitation or show of fear.

Appearance Her plumage is sleek and entirely unruffled, with no displaced feather, Some of the feathers of her wing coverts (?) are bordered by a lighter shade of brown than the rest of the vanes.

Eyes The pupils of the eyes are soft and dark. The irides are brown-orange, or orange-brown--very bright; but the general effect is soft and pleasing. The bill is almost black.

Due to the activity and shyness of the other bird, it has not been possible to get them both together for a long enough time to make a careful comparison of the outward appearance of the two.

The nest is getting more compact and is showing the effect of the lining operations.

Mr. Brock came up early this afternoon to see the thrashers. When we looked at the nest it was evident that it was fast approaching completion, as the lining was well along. The birds were not near the nest, but one was located on the far side of the oval lawn. I called her over and she took worms from my hand in the presence of Mr. Brock. The other soon came, taking worms tossed to him. True to form, they both started down the road running toward the nest 60 yards away. I told Mr. Brock that we would probably find them working when we got there, having previously told him before feeding them that this was their habit. We found them gathering lining.

Drinking action.

I then showed him how they would stop work and come to me for worms. One of them then went to the drinking dish a couple of yards away and jumped into the middle of it as if to bathe; but instead, drank. The action was odd. Possibly on account of the shape of the bill, the bird scooped up the water by stooping so that the breast and throat touched the water, the base and the tip of the bill were submerged, with the upper portion at the middle point above the surface. In this position she would then make a forward scooping motion and raise the bill only to a horizontal position.

Discussion of outward sex differences

We discussed the matter of identification of sexes. I mentioned the difference in eye color of this particular pair, pointing out that, of course, this might not be a fixed sexual difference, but one due to difference in age.

Mr. Brock said that he had examined many live thrashers of both sexes and that the males have darker throat patches and more pronounced dark lines (Malar streaks?) running down the sides of the throat from the base of the bill , and, furthermore that the male

is a more graceful bird. I have looked at both of the birds repeatedly at close range, but have been unable to note any constant difference in color or markings at all.

Somewhat later in the afternoon we went to the nest again. They were not working, but one bird came and ate soft-food from my hand. It was a little nervous, due I thought, to some bird giving a danger call from the tree overhead. I assumed that it was the one that I have been calling the female (without warrant) and gave the m matter no special attention, but after it had run down into the glade, it, or another bird, appeared in a tree on the other side of the glade and burst into short, full song. It thought it was the male--not the one I had been feeding; but Mr. Brock said that the latter was the male.

I can distinguish one from the other by difference in eye color, tameness and by accidental differences, such as a short tail feather on one of them, but not on the other, as is the case at present. But which is male and which female, I do not know.

After Mr. Brock left and it was getting about time for the birds to knock off work for the day, as shown by their actions, I induced them both to come to me at the same time and got a good look at them. There was no direct sunlight on their eyes, so those features could not be compared as to color. To me they looked exactly alike, but one is much more shy. I fed the tamer one and tried to keep track of both and when she retired, I induced the other to come closer, and, finally it ate soft-food from my hand. Now it may have been the same bird that Mr. Brock saw close to before, but if so, it was more timid than before. They were both in sight all of this tme. They may have changed about without my noticing it, but I do not think that they did. The last bird had not taken soft food from me before and

so it would appear that its resistance has at last broken, at least partly. In which case, if MR. Brock is right, I have the sexes reversed; but the notes will continue present designations.

February 25 th.

At 8 A.M. both birds were carrying lining to the nest. It was all soap-root fibre. The rope ravellings provided for them were not being taken. They were not too busy to come to breakfast ; the female bringing her load of lining with her and dropping it by my hand. She then stood on my hand and ate soft food placidly. The other was edging up closer and closer when a rabbit suddenly dashed into the glade and some small bird siunded an alarm note, whereupon both thrashers let go everything and bolted into the brush.

It was several minutes before they would venture out again; but both finally came to me after some coaxing, both bearing soap-root fibre. This time the sun was at my back and there is no doubt of the distinct difference in eye color. The female's is abright orange brown; the male's is duller and "colder", as if green had been mixed with it, giving an olivaceous hue. I think I can"see" the green, though this may because of the knowledge that a green pigment mixed with a brown in the right proportions would give this color.

I cannot vouch for the correctness of the color designation, as I have no standards with which to make comparison, but the difference is marked.

I could see no differences in markings or throat color, but the male gives the impression of being younger and less sophisticated. I know none of the ornithologists' ways of determining ages.

The female shortly went back to work again and the male was about to take soft-food from my hand, when a robin made a clumsy landing in the old oak overhead and he rushed to cover. He is far more timid t than the other bird.

The nest has been compacted and now seems much smaller than when it was just a rough platform. It doubtless is smaller, as I have seen them take hold of the outer twigs and fold them in toward the center. The exact boundary lines are not, of course, perfectly defined, but it appears to be about 14 inches in external diameter. If they are not working on it now (9:15 A.M.) I shall measure it...

9:25. The one I call the female was sitting in the nest doing nothing at all. Using the form, weight and warmth of the body to give the materials a permanent set(?) After a few minutes she came down and over to me without being called or enticed in any way, so I gave her soft food. She likes to stand with one foot on the ground and the other on my hand. The other bird bird came out of the brush and stood watching about 3 feet away, and then, getting bored, ran off down the road in the direction of the oval lawn. I could see every whisker on both of them, and, except for the eyes, I could discern no permanent differences between them.

Not counting random twigs, the nest , by actual measurement, may be fairly considered as 12 to 14 inches. in diameter.

With wings closed, it is hard to state precisely what feathers have the lighter margins previously noted. Just now, on the female, it looked as if it might be some of the coverts and the tertiary flight feathers.

1:00 P.M. As the Elephant Child in the Just So stories said , when the Crocodile had him by the nose:" This is to buch for be!" Also these birds, like the Tortoise and the Hedgehog in the same stories, seem to have entered into a deliberate conspiracy to confuse me.

About ten o'clock they were digging in the glaed and turning over pieces of loose bark and rotten wood which have fallen from the old oak and cover the ground, and as they were getting fair

results, I did not disturb them. However, a mole started to raise a ridge of earth about six feet in front of me and it seemed a good opportunity to see what a thrasher would do if its attention were called to the upheaval in actual progress. I succeeded in landing a worm exactly on the spot under which the mole was working and the thrasher that I call the male ran over and got it; but the mole stopped work and refused to continue as long as the bird was near. I then induced this bird, the one with the greenish tinge in the eyes, to approach for soft food, holding my head down so as not to frighten him by staring at him when he was about 6 inches away. Shortly I felt a soft pecking at the food, raised my head slowly, and there he was--only, while my head was down the other bird, the one with orange brown eyes, had taken his place and the green-eyed one was ten feet away busy on another job.

At about 12:15 I went to the nest again and sat by the bird bath previously mentioned. The green-eyed bird was calling: Scrip, scrip from the "chaparral" on the bank outside the fence. I know it was he, as I saw him go in and had just checked up on his eyes, and could also see the other bird. While he was still calling, the other carried up to the nest a piece of soap-root fibre and started a full song. If the male is the only ~~loud~~ loud singer, her was a chance to identify him. He came down, disappeared momentarily behind the trunk of the oak, came out on the other side and ran over to me--but the other one had joined him while out of my view. One with green eyes and one with brown I was, therefore, unable positively to check the songster as I had lost sight of him a few moments after he had sung.

Brown-eyes--I have no idea now of the sex of either of them--ate from my hand then jumped into the middle of the bird bath, facing me with her head just 18 inches from my eyes. The bath is raised above the ground enough so that I was looking down at her

at an angle of about 45 degrees.

I thought, thank the Lord, this is a warm day if she decides to bathe. However, she was contented with taking about a dozen good swallows in exactly the same manner as yesterday. She wets her entire throat patch and completely submerges the base of her bill, with the exception of the nostrils.

The rest of the afternoon very little work was done and that in desultory fashion.

February 26th.

At about 8:30 A.M. they were together at the entrance to the property. Brown-eyes came to eat out of my hand. When Green-eyes approached she turned and "hissed" at him and he retreated; though hissed is not quite the word, as there was some voice in the sound. She resumed feeding and, shortly after, each carried one small fibre to the nest.

Soon after this Mr. Sampson, my cousin and I were sitting near the oval lawn, when the thrashers came over to eat at their special table. A third thrasher appeared over the bank and approached the table, evidently, from his actions, having been there before. They both turned on him, though not abruptly, and all three disappeared. There was no sound of a disturbance; but full thrasher song sounded for a short time from a toyon tree about 10 feet farther on in the direction they had taken. An hour or so afterwards the two residents were carrying small quantities of lining to the nest, one thread at a time. Shortly before the episode with the third bird both thrashers had been sitting on the back of a garden seat and one of them broke into full song.

3 P.M. Not working on the nest, but both digging on top of the bank across the road north of the nest. They came down to feed from my hand; Green-eyes still shy and standoffish , but readily

taking worms dropped two feet away, digging there between worms, Brown-eyes, meanwhile, steadily eating soft-food from my hand.

They both picked up plant fibre and dropped it near me, not going to the nest at all. I may imagine it, but Green-eyes may have the flatter head). The talk of both of them was rather deeper toned than usual and suggestive of the opening notes of full song.

(Wrens are gathering nesting material and tapping in a pile of boxes underneath the pine tree at the east end of the lath house).

Feb. 27th.

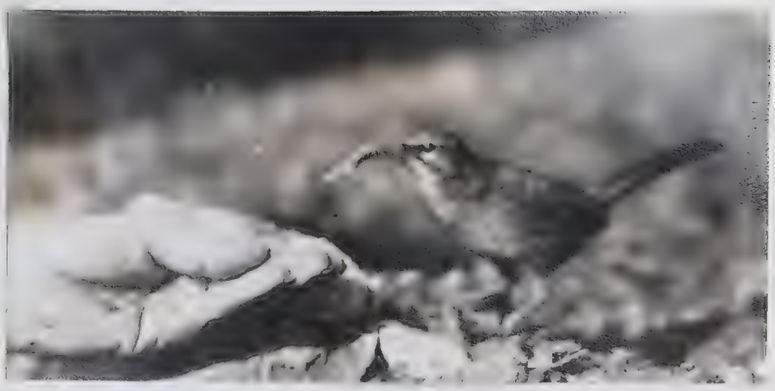
8 A.M. Neither thrasher in sight. They finally appeared for food, gathered a few fibres. Brown-eyes posed for her picture near the south side of the glade; Green-eyes ditto at side-walk level below the chaparral. (See p. 23A)

10:30. (While feeding the thrashers on the bank across the road north of the glade, I noticed Bush-tits building a nest in a black acacia (Acacia Melanoxylon) about 20 feet from the thrasher nest.

11:00. One thrasher in the nest "doing nothing".

1:30 P.M. They seem to pay little attention to the nest now, yet when I just fed them, they gathered up a few almost invisible fibres and carried them to the nest. Their talk changes from time to time. For a day or so they will make mostly low warbling sounds--or it may be for only an hour or so. Yesterday it was verging upon typical deep phrases used in full song. Today it is a sort of plaintive whine. They both seem to change at the same time. This refers both to their talk to each other and to me. This time I could see no difference in the flatness of their heads, when seen at arm's length at the same time. Difference in eye color is distinct. Green-eyes' head may be a little wider. He remains shy and will not now eat from my hand. He is more confident when his mate is near.

Brownie reaches for worm.



Got 'im.

Greenie near "chaparral."

Brownie.

Brownie near base of old oak.
February 27th.,1933

2:30 P.M. Took photographs of the old oak, Brown-eyes and the oval lawn.

After eating, the birds went up to the nest with perhaps one thread each, although immediately before this they were loafing across the road north of the glade.

4:40. Green-eyes refuses to eat out of my hand, but he draws upon his courage to do his best. He just tried to pull off one of my fingers; being unsuccessful, he tried again. It is not just a peck; he takes the whole end of the finger in his mouth and pulls.

(The Allen Hummingbird has been here about 2 weeks. I have just been able to get a good look at its back, in order to make sure of its identity).

Feb. 28th.

Practically no work was done on the nest beyond an occasional shaping of the inside by sitting down in it, turning around and pushing against it with the breast. Most of this was done just after I had given them food.

(Another Bushtit nest--nearly finished--located by Mr. Sampson by tracing the birds carrying nesting material).

March 1st.

At 9 this morning the thrashers were loafing in the thick growth on the bank. When they came out on being called, they were more than usually concerned about what was going on in the air above, and would not stay long with me until I moved to another place near a sage bush; then they were at ease.

After eating they took turns in shaping the nest inside, without, however, adding any new material to it. The curved bill seems to be of advantage here, as they push agaist the inside of the nest with the upper portion of it.

At 10:45 they were still loafing, but on seeing me, gradually

The Old Oak
Showing location of Nest No.1
Feb. 27 1933.

approached for food, then to the nest.

Green-eyes' eyebrows lighter

Green-eyes has slightly more distinct and lighter colored "eyebrows." Brown-eyes looks somewhat larger, is tamer, more active and seems to take the initiative in various bird enterprises. They appeared to loaf all of the afternoon, except that when they were given food, they went back to shaping the inside of the nest.

Mar. 2nd.

They were not working at 9 A.M.--loafing outside the south fence. They tried to come through the wire fence at the top of the slope, but

G.E. offers mate food.

the honeysuckle was too thick and they climbed over to me. For the first time, Green-eyes was seen to offer his mate a meal-worm, instead of its being the other way around. They then remembered that they had a nest and spent a little time shaping it. I suspect that Brown-eyes is really the male.

About sunset they seeemed to be looking for a place to roost. They wandered about quite a bit, showing little interest in me and more in each other than I have previously observed. They indulged in various capers about each other, both singing typical thrasher sup-

Copulation.

pressed song and finally copulated. (First time noted). It was too dark under the trees to distinguish between them at a distance of 20 or 30 feet.

March 3rd.

Check sketch with skins.

Mr. Sampson and I went to see Dr. Grinnell and check the rough sketch which I made yesterday, of Brown Eyes, with the skins at the Museum of Vertebrate Zoology; for in all of the descriptions of thrashers which either of us recalls reading, detailed descriptions of the

No light on distinguishing sexes.

head and throat markings are lacking (and these are very distinct on these two birds ) and there appear to be no references to distinguishing marks of the sexes. Considering the roughness of the sketch, it checked very well with the skins, though no light was thrown upon the

distinguishing marks, if any.

Shaping nest. On returning about 11:15, one bird was in the nest shaping it. Brown-eyes had a meal of soft food from my hand, and when she had had enough, Green-eyes came and took worms from my hand freely; but when offered soft food, would only pull my fingers. He acts as if he were puzzled as to what it is that Brown-eyes finds so attractive in my hand when it is perfectly evident to him that there are no worms there.

G.E. drinks Green-eyes drank out of the bird-bath for the first time in my presence. He did not jump into the middle of it, but stood on the edge and did not immerse his bill so deeplt at the base as his mate does.

I hope that this is Green-eyes' final recognition of the fact that he might just as well join the family circle as continue snooping around on the outskirts of it, wondering what his mate find so attravtive. Possibly he has reached the conclusion that, if everything goes well, there will shortly be a tremendous strain on the thrasher Commissariat, and that it is the part of wisdom to make contact and establish credit with purveyors of food supplies without further delay.

"Sun-fitting" described. 1 P.M. I went to the low bank which bounds the glade to the south where it is warm and sunny. Although I did not call, the thrashers soon came out of the brush. Green-eyes commenced a long "sunfit". Brown-eyes came to where I was squatting on the ground, took a few worms, then remained within reach and, for several minutes, also "sunfitted". In doing this they turn sidewise to the sun, cock one eye at it, open their beaks wide, stand their feathers on end so that the skin and the oil gland can be seen, and, while keeping both feet upon the ground, turn over on their sides away from the sun, gasp and raise the wing on the sunward side. They keep leaning farther and farther away from the sun, sometimes losing traction with one foot and falling completely over on to one side. Meanwhile they pant, flutter the nictitating membrane and seem on the verge of dissolution.

When Brown-eyes came out of the fit, she began digging energetically, still within reach, and seemed to get plenty to eat; but although so near, I could not see what it was. However, it was not angle worms. I put my hand, containing a worm, but with fingers closed, on the ground near her. She thrust her bill and head into the opening between the thumb and index finger and extracted the worm.

Attitude towards lizards.

I had often wondered how these birds regard lizards, and the opportunity to find out came at this juncture. A lizard had been sunning himself on a nearby rock where she did not see him until he moved. When she spotted him, she was after him like a flash; but the lizard was too fast for her and she could not catch him, although she chased him for about ten feet, when he dashed into a crevice between stones in a rough wall and escaped. Somewhat to my surprise, no attempt was made to ferret him out of his refuge and Brownie seemed to forget all about him quickly. The affair did not seem to be very serious--more a matter of play than anything else.

I induced Green-eyes to come for worms, and, for several minutes, both birds were sun-fitting at the same time, B within reach and G about 3 feet away.

G.E's eye color.

I got a good look at his eyes in full sun. I am unfamiliar with color terminology applied to birds. However, I would say, now, that his eyes are olive-brown, i.e., according to my conception (which may be faulty) of the effect of mixing pigments: a brown in which some green has been mixed.

Sexes uncertain.

While I am entirely at sea as to which is male and which is female of the two birds and it may be necessary to reverse present designations eventually, these notes will continue as at present, to avoid confusion, until a definite conclusion is reached.

After this performance the birds showed no intention of leaving me--I left them, thinking that if they were given no more food for some time, it might be easier to attract them later in the afternoon

when Dr. Grinnell comes to see them.

Dr. Grinnell watches thrashers.

Dr. Grinnell and Mr. W.F.Sampson came to see the birds shortly after 4 P.M. We went to a point near the nest, but they were not in sight. Shortly, however, Brown-eyes appeared, somewhat shy in the presence of my visitors, but, with a little coaxing, took meal-worms from my hand. Shortly afterwards, Green-eyes peered up over the bank 5 or 6 feet away, but would not come and eat, though taking the part of a spectator who would like to participate. The food offered was then changed, Brown-eyes eating soft-food readily from hand, and, on having enough for the time being, on leaving, gave some to her mate.

Somewhat later after returning from a walk about the place, we were standing in the road a little farther from the nest and both

B.E. sings.

birds appeared underneath a baccharis hedge. B.E. came out into the open road to me for worms, and, a little later, stood on the edge of the road facing us 20 feet or so away and sang a few bars softly. There was no confusion of identity, as B.E. has a temporarily misplaced feather on the neck which can be easily seen fifty or more feet away.

Sexes reversed?

About an hour after my visitors had left, both birds cavorted and dug a few yards from me in the deep shade, and from their actions, it looks very much as if I had the sexes reversed; but they moved about so rapidly that I am not certain. they were

March 4th.

About 8:30 A.M. both birds were digging about 50 yards from the nest near the N.E. corner of the property. ( I have a topographical map of the place with all trees larger than bushes spotted on it). They gradually worked over to me, had worms and soft food, B.E. went up to the nest and G.E. climbed up into the old oak, perched on the

G.E. full song.

end of a stub branch and after a few preliminary loud calls, broke out into full song.

Bill open between songs

He not only opened his bill wide while singing, but, curiously enough, kept it open between songs. There is no question as to which bird was which this time as they had not yet repeated on me the tactics which Slow Solid and Stickly Prickly worked so successfully on Painted Jaguar. Soon, however, both birds were high up in the tree, the highest I have yet seen them, and thenceforth it was first one and then the other alternately appearing and disappearing until it was impossible to tell tother from which. No eggs in the nest.

G.E. positively sings full song.

No eggs.

Allen Hummer nesting activities.

(During a part of this time an Allen Hummingbird was gathering cobwebs from the upper bank of the road, but I could not see where he took them, not being able to keep all of the territory in view at the same time).

The rest of the day little attention was given by the birds to the nest, but there was a lot of digging.

Digging characteristics.

At one place near the glade where a mole has thrown up a miniature mountain range about 25 feet long, the thrashers have taken advantage of his pioneering efforts and have continued the good work by scattering hardened slabs of top soil, loosened by the mole, in all directions, digging up in the process bulbs of the Brodiaea growing there naturally. (Wild Hyacinth, Cluster Lily, etc.).

At one point they have diverged to dig up some Fritillaria Agrestis (Stink Flower) which I had planted there above an underground net-work of chicken-wire placed there to protect them from moles and gophers. I knew that the quail and Gambel sparrows might eat some of the leaves, but had overlooked the digging thrashers!

" Digger of Diggers"

This California Thrasher should have been given the specific name of Digger of all Diggers. In this work he uses his bill alone. I have watched, in the aggregate, perhaps hours of digging, and never once has either bird purposely moved anything with its feet. Practically all of its work is accomplished by rhythmical side sweeps of the bill, first to one side and then to the other, as if the bird were keeping time to the music of an orchestra inaudible to the

grosser human ear, or, as often appears to be the case, as these notes record, the strokes of the bill keep visible time to his song.

Mimicry or motion. This afternoon one was digging near me when the other ran up to him quickly, stood in front of him face to face, peered down into the hole and imitated the swinging motion of the other in exact synchronism without, however, attempting to interfere--a curious sight.

Green-eyes, who was doing the digging, at first paid no attention to this mockery, but finally had enough of it and gave the other a combined peck and push, whereupon the performance ceased. None of this appeared to arouse any real resentment on the part of either bird.

March 5th.

This morning I made a short ladder so that I could look into the nest easier, but deferred placing it as one of the birds was sitting quietly in the nest. It remained there for an hour or more and I then looked for eggs, but there were none.

Visitors hear flicker imitation. Arrival of visitors prevented further observations for some time. As they were leaving about 4 o'clock one of the birds broke out into full song, in which, at one time, the call of the flicker was so exactly reproduced that my visitors commented on .

4:07. Went out to complete the ladder job, but one bird was sitting quietly in the nest, so the job was postponed. I am hoping that I shall be able to identify the author of the eggs, if any. More visitors came, so I was further delayed.

5:30 The visitors have left. I went out and finished the job, then climbed up the ladder to find a bird on the nest, so as I did not care to disturb it (It had gone into it while I was working there) I did not investigate and it was too dark inside the tree to determine which bird it was.( Mr. Brock says that birds usually lay their eggs in the morning. One each morning until the set is finished).

The bird was not disturbed by my peering into the nest.

# APPENDIX A

Note 1, p.7.

Feb. 10, 1934. At the time of writing this entry, the sexes of the birds were not known. As a matter of fact, it was the male, Brownie, Brown-eyes, B.E. or B that took the worm.

It was not until October 12, 1933 (See p. 462) that the sexes were distinguished. Therefore, in these notes, up to the time of determining the sexes, the personal pronouns are wrong as applied to these birds, as also are the designations male and female.

Thereafter they are correct, except, perhaps, for an occasional slip, to be expected under the circumstances.

Note 2, p.10

Feb. 10/34. Their attitude toward crossing this space has not changed in the slightest--they are as much afraid as ever. As it was across this space that they had to come during the taming period, or nearly all the way across it, it now seems in retrospect the more remarkable that they should have come to me at all.

Note 3, p.33.

Feb. 14/34. The differences noted have proved to be constant, although occasionally either bird may temporarily change the carriage of its wings.

At 5:45 P.M. I went again to the glade, both birds coming out of the bushes at once. I gave them both worms and Brownie soft-food in addition, then left them abruptly to make an enveloping movement by the left flank to look into the nest before they could get there. I could not see anything in it, but while I was pulling the branches aside about a foot from the nest , Brown-eyes suddenly appeared, popped down into the nest within a foot of my hand and sat there with the utmost complacency; so I failed to gain my objective. However, I was able to identify the bird, as I was nearer than before and could easily make out the displaced feather on her neck.

As soon as I left, she came out again; but as she had behaved so patiently under conditions which might reasonably have caused some resentment, it seemed a pity to cause possible further anxiety, so after having rewarded her patience by giving her all that she wanted to eat, I left her in peace.

During this meal it was noted that she repeatedly glanced up at her nest as if to assure herself that everything was all right. This was new behavior. For the first time,also , the standoffish mate was the first to respond to my invitation, while Brown-eyes came only on repeated invitation, glancing back at the nest frequently before moving toward me, as if a little doubtful of my good faith after I had tried to steal a march on her.

March 6th.

9 A.M. Nobody working when I neared the glade, but both came out of the bushes for food. Brown-eyes took but a few swallows of soft food and went directly to the nest. Green-eyes took a worm from my hand, but refused soft-food and then suddenly executed a flanking movement and stole worm out of the the open worm box which I had placed on the ground where I did not think he would be bold

enough to go.

I went to the house to telephone and returned to the nest. One bird was in it. I was almost certain that it was Brown Eyes; but while checking up to make absolutely certain, up came that bird and sat on the edge of the nest. I am experiencing considerable difficulty in keeping track of these birds in my effort to determine , in the event of eggs being laid, which one is the author, and I am quite prepared to discover that I have the sexes reversed.

At about 11 6'clock as I came up the street in my car, both birds were out by the sidewalk about 100 feet from the nest, 30 feet lower, and separated from it by the fence and the thicket on the high bank. I drove in, parked the car as quickly as I could and hurried to get a peak into the nest before the owners arrived. I found them on the ground below the nest, apparently waiting for me (!) very friendly and anxious for food. There was nothing in the nest. I returned about 10 feet to the point where I had just fed the birds about 1 minute before. There was only one bird there, doing an agonizing sun-fit, so ruffled up and lopsided as to resemble nothing within reason. A glance toward the nest revealed the other one in it. To see which one it was, I restored the sun-fitter to normal form and dimensions by administering a worm. It proved to be Green-eyes, hence, by irrefutable logic, B.E. was in the nest, or o ought to be. But she was not--she was coming to partake of the banquet. These Jacks-in-the-boxes may know which is which, but I don't.

March 7th.

At 7:45 A.M.there was nothing in the nest. Both birds were down on the bank outside the fence. They climbed over, one taking food from one hand and the other from the other. A little later one bird was on the nest. It came down when called and proved to

be Green-eyes. This is the first time he has come to me from the nest.

Brown Eyes came out of the glade, and as both remained near me and were seen under the same light conditions, it was possible to compare their various points under favorable circumstances.

No difference in general coloration can be seen with certainty.

G.E. may be slightly lighter and gives the distinct impression of being slightly smaller; but much depends upon how they are carrying their feathers at the moment.

At present (whether it is a constant difference remains to be seen) Brown-eyes carries her wings more compactly folded, so that their tips meet above the tail coverts.

G.E's wing tips are carried lower than the base of the tail so that they both can be seen below the tail when the bird is seen in partial profile somewhat to the rear.

G.E's superciliary stripe is more prominent.(See note 3, Ap. A)

One bird was in full song before sunrise this morning.

As far as can be seen at the present time, the nest is used for thinking purposes only, its use being impartially apportioned between the two birds. It looks almost big enough inside for two; but it seems that they do not both have to think at the same time.

10:30 A.M. Went out and stood at the south side of the glade without moving about to see what would happen. Neither bird in sight. Soon B.E. came out of the glade, began walking about my feet, "talking." In about a minute she was joined by her mate. As I made no sound, they appeared to be somewhat mystified, walking around me and occasionally looking up at my face and talking. This continued for several minutes. I then fed them, and when the food was gone, went quickly to the nest and sat in the crotch of the old oak looking down into the empty nest.

Amost as soon as I could get there Brown-eyes climbed up and settled down in it with occasional glances up at me. In less than half a minute Green-eyes came, and, after a little billing, he took the place of his mate. The reason for this is not clear, as there are no eggs and the nest seems to be finished.

1:45. Went up to look at the nest. No birds in sight. Almost immediately, howevr, Brown-eyes popped into it from nowhere.

They always approach the nest by climbing up through the branches from the ground. The inside is well lined with soap-root fibre and is a much better job than I expected, being deep and soft despite its scraggly outside appearance. My inspection caused no evident resentment. I climbed down; the mate appeared from the bushes, and the bird in the nest came to me for worms. After this both went off to another part of the garden, seeming to have no further concern about the nest.

March 8th.

At 7;45 Green-eyes was sitting in the nest. Fed Brown-eyes. They then changed places, leaving the nest empty for a few seconds, and I saw that there were no eggs.

At 9 A.M. Green-eyes was in the nest and B.E. was hanging around me about 50 feet from it. Suddenly loud outcries came from the nest in which I could distinguish the voices of the thrasher and the California Jay. B.E. and I rushed toward the nest and a Jay flew out with loud, raucous ~~cries~~ screams. Brown-eyes got there first and when I arrived,she was standing on the edge of the nest caressing her mate,who sat in it looking up with open beak.

This looks as if it might be the beginning of trouble . I cannot sit here all day with a gun, and a screen over the nest will not keep out the jays without excluding the thrashers as well.

At 9:20 the birds had changed shifts. Green-eyes was digging and secured a large angle-worm, thus showing that they do sometimes eat these creatures. G.E. finally consented to eat a good, full meal of soft-food from my hand. He sweeps more of it aside than the other bird, but picks up the crumbs in the same way.

11:40. Brown-eyes is having an extra long session in the nest. I went up and watched her. She raised herself at intervals and poked around beneath her with her bill and made rapid shaking motions from side to side with her rear end while partly standing up in the nest, then settled herself gingerly with delicate movements as if hovering ~~it~~ an egg and working it up through her feathers to comein contact with her skin. She certainly looked like a bird laying an egg, but I did not disturb her to find out if she had done so.

The rest of the morning I had no opportunity to look into the nest as one or other of the birds occupied it at all times.

At about 2:40, Mr. Sampson and I went to the nest, and, after much coaxing, finally induced the occupant, Brown Eyes, to come down and eat, while Mr. Sampson went up to the nest before the other bird could get there, and there was the first egg!

It looks as if Brown-eyes was the author, and that she laid it when I was watching her just before noon. This, however, is by no means certain. (Oct. 1933. Brown-Eyes is the male.)

March 9th.

At 7:15 A.M. Green-eyes was on the nest and would not come down to eat; her mate, however, proved a willing substitute, coming from the "chaparral."

At 8:15 Green-eyes was still in the nest and unwilling to come down; but her mate undertook to handle the food offered.

At 9:15, when I again returned to the scene of operations, B.E., who now has a displaced wing feather, was sweeping the oval lawn ligh~~t~~

ly with her bill and Green Eyes was still in the nest; but Brown Eyes had evidently followed me over, although I had not seen her come, and came climbing up to the nest; but as soon as she saw me sitting in the crotch of the tree, came over to me, got a worm and took it to her mate in the nest.

Brown-eyes is carrying her wing tips lower this morning, so this may not be a distinctive difference between the two birds.

I have not yet looked to see if there is another egg this morning, as the birds are sitting very closely.

At present Green-eyes is doing most of the incubating; just the reverse of yesterday.

These two birds, except under the most favorable conditions and when seen together, look exactly alike, and unless I can see their whole bodies, or the color of their eyes, or some temporary accidental difference, it is almost impossible to tell them apart. Especially now that G.E. is getting tamer. To be certain which is on the nest, it is usually necessary to find the other bird and get a good close look at it, thus identifying the other indirectly.

This does not always work either, because while I am doing this, they sometimes change places without my being able to follow them both in the process.

At 9:55 Green Eyes was still in the nest, B.E. digging earnestly below it and often looking up at it. The latter soon went up and after some billing, G.E. flew out and B.E. took his place so quickly that I did not get a chance to look in.
(Came in to write this note. Will go out now, 10:00, to see what G.E. is doing).

10:15. He was digging, of course, at the south side of the glade. After some coaxing he came and took worms, but refused soft food. It is odd that these birds have different attitudes toward this food.

Between worms it was necessary for him to have several agonising sun-fits in which he appeared to disassemble himself almost completely. After this he spent a lot of time in getting himself properly rearranged to the last feather with meticulous care.

I had expected, from what I had been told, to hear a great deal of singing by the male on arrival of the first egg, and in this way, be able to identify the sexes. Curiously enough, since the first egg was laid, I have heard no loud singing by either bird and, for the present at least, there is little talk and subsinging.

At exactly 11:40 A.M.I went up to the nest. As I approached, it was noted that the occupant was going through the same performance as it was yesterday at this time. When I got up to the nest, the second bird appeared and, as they changed shift, egg No. 2 was revealed for a moment.

I climbed down immediately, called to me the bird that had just left and it proved to be Brown Eyes.

Soft-food seems to make B.E. very thirsty. Each time, so far, that she has taken a drink in my presence, she has jumped into the middle of the bath. The depth to which she dipps her bill seems to vary according to the depth of the water.

1:30 P.M. Green Eyes is having a long turn on the nest. B.E. is down on the bank, outside of the fence, south of the glade. She comes squeezing through the wire mesh. It is pretty tight for her. She has a good meal of soft-food and a good drink, jumping into the middle of the dish as before. This fence is a wire one with triangular mesh. The triangles have a clear opening of 2 " base and 4" altitude. They are arranged alternately base up and base down. The ground level is higher on the inside than on the outside; consequently is difficult forthe birds to get through at ground level. To

avoid this difficulty, the thrashers have dug away the earth on the inside of the fence at a point giving convenient access to the glade.

3:30 P.M. Brown Eyes on the nest. Green-eyes, who was on the bank outside the fence, had a hard struggle to get through the regular passageway and had to do some more digging. It looked at one time as if he might be stuck. He is still much more shy than his mate.

5 P.M. The birds changed shift.

March 10th.

Green-eyes on duty at 8 A.M.
" " " " " 9 " "

I had no opportunity to observe the thrashers until 11:10, at which time B.E. was in the nest, which I verified by locating G.E. and giving him worms, which he was reluctant to take, needing a lot of coaxing and approaching very carefully. He would hold each worm a long time and occasionally look up at the nest as if considering whether he should give it to his mate. This, no doubt, is what he had in mind, because when he took the last one, he started running rapidly toward the nest. I beat him to it because he hesitated whether to use my ladder or climb up the tree.

Brown-eyes was partly standing up and probing about with her bill and when her mate appeared with the worm, she paid no attention at first, then took the worm and flew away, Green-eyes taking her place quickly, but not until I had seen that there were 3 eggs. Neither bird made any sound at all on this occasion, and, in fact, they have practically ceased to talk either to each other or to me. They do not answer me now when I call them and seem to approach more reluctantly, but do not appear to mind my presence at the nest.

It now looks as if Brown-eyes were"still" the female, but for how long, I have no means of knowing.

I gave her a good meal of worms and soft-food. No matter how often, or how much I give these birds, they seem to dig just as much as ever.

Incubation seems to have commenced with the first egg, since after the first egg was laid, I have not seen the time when there was not either a bird on the nest, or one about to enter it.

1:15 P.M. As I was passing the nest, they were in the act of changing shift; G.E. proving to be the one leaving. He got a few worms and then remained near me "doing sun-fits". In one of them he raised his sun-ward wing so as to let the sun shine under it. So far, this sunning action is all one-sided, that is: the birds turn only one side to the sun and do not reverse position to give the other side its turn.

March 11th.

At 8 A.M. one of the birds was on the nest, but I could not tell which.

At 8:45 G.E. was off duty and came to me so promptly that I mistook him for his mate.

About 11:15 Brown-eyes, in the nest, was somewhat restless. My sister was at the nest watching. I looked up Green-eyes, gave him worms, having told my sister, that if everything went according to precedent, he would take one up to his mate and then relieve her. And that is exactly what happened. In making the change this time, the eggs, of which there were still but three, were uncovered for perhaps a half-minute.

I did not return again until 2:30, at which time they were again changing shift, B.E. going off. I have been keeping out of the glade, myself, as a usual thing, to leave the creatures in it undisturbed; but this time I went in to note the effect on Brown-eyes, who was there. It did not disturb her in the least, and she came to me

readily where I sat on a small pile of half rotted oak, in such a position, that, in order to let her eat out of my hands on the ground, it was necessary to place my hands between my feet and directly below my face. In eating there, her back would be about 18 inches from my nose. This proximity did not disturb her and she repeatedly looked up into my face while eating (characteristic) then went off about 8 feet and sang softly, but with many complex phrases and variations--sub-song, or undersong. (There is no doubt but that both of these birds sing).

I started digging in the earth to see if I could get some information on the food habits of thrashers. I found sow-bugs, centipedes, spiders, small black beetles ¼ to ¼ inch long, angle-worms and small snails about the size of peas. Brown Eyes was watching from about 6 feet away (I had hoped that she would come and help dig). I gave her three angle-worms. Two she would not even touch. The third she turned over with her bill without interest. The sow-bugs, spiders and centipedes she did not see, and I did not care much about handling any of them with my bare hands. The beetles were lively and attracted her attention, so she ran over and gobbled them. The snails she swallowed whole, shells and all. She would not dig in my excavation, but picked up particles of something invisible to me, from the surface of the disturbed earth.

4 P.M. There is a strong Sou' easter blowing, and the nest is bobbing around a good bit. It is deep, however, and the bird sits well down in it, looking snug and comfortable. It will not be any too good if it rains, though. ( Sou'easters are the usual rain winds)

March 12th.

A heavy rain commenced last night about 10:25, accompanied by r rather strong wind and I naturally wondered whether the bird on the nest would not get a good soaking.

At a little before 8 A.M., I went to the nest; its occupant appeared perfectly dry and comfortable. It was B.E., for her mate soon appeared and condescended to take a few worms from hand. I want him to get used to the presence of others when I feed him, so I had Julio (pronounced Holio by himself and friends, instead of Hoolio, as in Spanish) stand along-side me with his glaring white duck trousers. Green-eyes, drawing upon all of his resolution, emerged from the shadows in spite of Julio's brilliant counter-illumination of the landscape, and took a few worms. However, he held his feathers tightly compressed while he did it and was ready to dart into the bushes if anybody so much as winked.

These birds are very deceptive in size. They look bigger 20 feet away than when only 20 inches off. Across the glade they are as big as magpies, but when near at hand, only about half as big. I think that part of this Protean effect is due to the fact that, close by, they are more alert, with feathers held close to the body. Further off, when relaxed and fully at ease they are fluffed out more. This habit of theirs has made it difficult to determine which is the larger of the two, as they do not usually perform their cyclic changes in synchronism. They are not always scared at the same time. Brown-eyes, the provisional female, though, fills the nest more fully than does her mate--a fact which has been noted independently by visitors without my having intimated that there was any question as to comparative sizes.

At 9:15 they had changed shift again, and Brown-eyes came running to me as soon as she saw me, without being called. The increasing confidence of these birds is a source of great pleasure.

Both birds look perfectly dry as to bodies, but both of them have the uppermost tail feathers somewhat wet, so that the shafts

of the feathers (I do not know the technical name) are quite prominent and it is easy to imagine that, superficially at least, they are not so far removed from their ancestor the Archeopteryx (If he was an ancestor). About all they appear to lack to make the resemblance more striking is teeth.

12 Noon. It was raining heavily, so I went to the nest carrying an umbrella (a new appliance for these birds ). B.E. on the nest looking dry and comfortable and not minding the umbrella, and evidently not needing one. G.E. was not in sight, but was found eating suet and chicken-feed at the oval lawn. A Fox Sparrow was scratching in rocking-horse fashion eunderneath the stand where Green Eyes was eating. Quail were eating the grass, and nearby were Brown and Spotted Towhees, Gambel and Song Sparrows and Juncos. As G.E. left the stand he was replaced by a pair of Wren-tits.

1:30 P.M. Still raining. Brown-eyes on the nest with a few beads of water on her feathers and bill. She shakes them off of her bill. Her body is dry in other respects, but her tail slopes the w wrong way for this kind of weather! The leaves above offer considerable protection from the falling rain, but they tend to concentrate it into larger drops.

3:40. Green-eyes incubating contentedly. Search for Brown-eyes discloses her sulking under a pyracantha at the oval lawn. She will not come out--looks at my offerings of worms and soft-food with lack-lustre eye. I note that the other birds in the bushes are not moving. I go closer to B.E., but she will not budge, although plainly looking at the worms in my hand. I go still closer and she suddenly darts out, siezes one and retreats in a panic, running and flying. This is repeated several times. The other birds in the bushes begin to come out, but still Brown-eyes will only dart out

and back again with anxious glances up into the sky and long, horizontal peerings into the bushes. She cranes her neck and stretches up to her full height and looks in all directions except at me. She is not worried about me at all and does not hesitate to turn her back on me. Finally she trots out calmly and eats soft-food from my hand, then suddenly bolts back into the bushes again in a panic and resumes her intense scrutiny of the surroundings. She is about to come out to me again, but changes her mind and runs rapidly toward the nest 175 feet away, keeping under the trees and bushes as much as possible.

I could see no enemy anywhere, but there must have been one, as this is typical behavior when an enemy is either present or has gone but a short time previously.

These thrashers are extremely nervous, alert and responsive to abrupt movements or sudden sounds which they associate with danger. As noted previously, firing a shot gun about 25 feet away from one of them and aimed within about ten feet of it, did not cause the bird to exhibit fear, and in the case of the other bird, farther away, it actually seemed to attract it. Yet the snapping of a twig, an alarm note, a sudden rustling of wings, a shadow rapidly moving, a flash of light from my glasses, or a too rapid approach on my part causes them to retreat into the nearest bush where, however, they stand,firm and alert, without cowering. As well as they know me now, they will often retreat into the bushes on first catching sight of me near at hand, and come out only when satisfied that I am still harmless, whereas many of the other kinds of birds here often give the impression of being actually tamer--up to a certain pont--and perhaps they are.

As previously noted, most of the thrashers' digging is done with vertical strokes of the bill, followed by sweeping movements

from side to side. The curve of the bill is most effective when it is used for prying out stones. When thus used, the bird inserts the bill under the side of the stone farthest away from him and pulls it toward himself, the stone often rolling on top of his feet.

In this way the thrasher can pry out and roll over stones as large as the fist, or even larger, and I have often seen him jump into the air when determined to deliver a powerful blow, as if to utilize the weight of the descending body to reenforce the blow.

Digging involving prying is a small part of the bird's excavation work. Doubtless it is an important part, otherwise there would seem to be no good reason why the bill should curve more abruptly near the tip than elsewhere, givinh him a sort of elephant-seal appearance. The sharp curve at that point might easily be a positive disadvantage in ordinary digging unless its center of curvature happened to coincide fairly closely with the center about which the bill is swung in digging. Anybody who has swung a pick that has too short a curve knows what an unsatisfactory implement it can be.

I doubt if the bill is an unusually effective fighting weapon, in spite of its formidable appearance. It is not sharp.

March 13th.

Green-eyes in the nest at 8:05 A.M. B.E. came out of the glade promptly to eat soft food, leaning her breast against my hand. Both birds appeared quite dry, although it rained during the night. Brown-eyes has a disgraceffuly dirty bill, all caked with mud up to the nostrils and makes no effort to remove it.

She shows absolutely no sign of the fear noted yesterday.

9 A.M. G.E. still on the nest; B.E. came bounding out of the glade to eat soft food. However, this morning, she seems to want her food alive and kicking, so she began actively digging four feet from me where it is very rocky, turning over stones half the size of my hand

and rolling them down the bank. Here she got an angle-worm about w which she was not at all finicky, and bolted it down at once. Evidently these worms are not so bad when one is hungry. She also gobbled a little snail about a quarter of an inch in diameter without breaking its shell. She is unusually abounding in vitality this morning, full of confidence, even talking a little and answering from the bushes.

I did not see the change of shift, as I had to go down town. At 10:40 Brown-eyes was on the nest and G.E. very friendly and eager for food. I gave him more worms than he deserved, as I wished to see if he would take one up to his mate as he has done on previous occasions, and then change shifts; but he gulped them all himself, finally going away satisfied. I had thought that this was about the right time to change shift, but it seemed not.

At 11:20. Went out again and G.E. was just settling himself on the nest. It was about the right time to change. Browneyes was nervous about something and would only dart for worms, snatch them and retire into the bushes and dig.

2:40. Green-eyes on duty. Probably there has been a shift in the meantime. B.E. calling: "Scrip, scrip" outside the fence.

Mr. Sampson present. B.E. comes through the fence for worms, her nervousness of a short time ago having disappeared. She starts for the nest with a worm. S goes up to it to observe the shift. G.E. opens his bill and B.E. hands him the worm, whereupon G.E. promptly departs and B.E. settles on the eggs, of which there are still but 3. This is a standard shift. It looks as if the set is complete. Incubation commenced immediately with the first egg and has proceeded continuously ever since; interruptions, as previously noted, being usually only a matter of seconds at each change.

(While I was crouching nearby watching the change of shift, an Allen Hummingbird was gathering down, about 2 feet from my head, from a baccharis bush).

Mar. 14th.

8:20 A.M. I have just witnessed the first departure from this programme. Brown-eyes was on the oval lawn a few minutes, very tame and confiding. I gave her worms and soft food and when she had had enough, she started in leisurely fashion towards the nest, I going with her. When we got there she did not go up, but went into the glade and out the easy side. I looked into the nest and saw Green-eyes sitting there comfortably, talked to him, then stood in the road near-by. Brown-eyes was coming towards me, when the rich opening notes of thrasher full-song were heard from the nest. We ran toward it at once, but Green-eyes had hopped out and left about ten seconds before Brown-eyes arrived and settled down in it. There were three eggs. This is the first time that one bird has been seen to leave the nest until the mate has been there, sitting on it, ready to take over, and the first time that the bird in the nest has been heard to notify the other that it was going to quit whether the other showed up or not.

Just on hour afterward I went out and Brown-eyes came running and flying to me. This looked like a short shift, as according to precedent, she should have still been on the nest. Thinking, that perhaps neither was on it, I looked, but Green-eyes was there. Brown-eyes came too and they changed shift, Green-eyes coming to me to eat worms.

(The place swarms with Steller Jays this morning).

11:50. Green-eyes on the nest. No records for the rest of the day, although the nest was looked at occasionally.

Rain began about 4:15 P.M.

March 15th.

Went to the nest at 7:50 A.M. Brown-eyes sitting in it looking good and dry, although it had been raining during the night and every-thing about was wet. While I was talking to her, she began chirp-

ing softly, which I assumed was in my honor; but as she began peering over the edge of the nest, her mate came climbing up through the branches and she dived out before he had quite reached it. This is not considered good practise in industrial operations, as in changing shifts, there should be a slight over-lap so that the oncoming watch may be fully advised of all operating conditions during the preceding period and be prepared in advance to correct any unfavorable trends and keep the plant going at a high state of efficiency. It also prevents any "passing of the buck" between the two crews in the event of accident due to carelessness. However, the eggs were uncovered, in this instance, only about 10 seconds.

Both birds dry, and an Allen Hummer buzzing about almost within arm's reach while the change was being made.

9:40 A.M. Green-eyes on the nest, Brown-eyes answering my call from the bushes nearby and very glad to have a good square meal of soft food from my hand. Her bill is caked with mud, which she makes no effort to remove, an oversight characteristic of these birds.

Vigors Wrens ( A Vigors wren has definitely adopted one of the bird houses made about two years ago and never occupied. It was previously located on top of a lath house where the wrens frequently searched for food. About two weeks ago it was taken down, the entrance made smaller in diameter and a horizontal slot cut across it so that large twigs could be taken in more easily. It was then moved to the trunk of a pine tree and placed about 7 feet above the ground. Under this tree is a compost heap and a pile of nurserymen's "flats". The wrens had been heard tapping in the flats and seen carrying nesting material into them (also out of them), so it was considered a good idea to move the box to that vicinity.

In about a week they were seen carrying twigs into the house. In previous years the wrens had nested in various other places,

such as: in a rock wall, a pile of boxes, under a tile on the roof and behind a housing placed around the trunk of an oak tree to keep it from being barked by motor-trucks during the construction of the house).

12:15 P.M. No notes taken since 9:40. At 12:15 Green-eyes went up to the nest and took over incubation--a matter of seconds only to make the shift. Brown-eyes came to me and ate soft-food and meal worms, then went promptly to digging. As these birds search for food practically all of the time now when not incubating, merely to supply their own individual needs, they must be extremely busy when they have young to feed in addition.

An odd junco. (There is a junco outside the window, with light colored patches, almost white, on cheeks and throat. He was seen first two days ago and remains with the flock).

Nothing unusual during the afternoon.

March 16th.

Rained hard during the night. At 8:30 A.M. Green-eyes was off duty. I fed him and they changed shifts, Brown-eyes coming for food and standing with one foot on the ground and the other clutching one of my fingers as if to keep me from running away. Both birds are surprisingly dry after such a soaking rain.

Fox sparrow (A fox sparrow is singing in a cherry tree)

9:30 A.M. Green-eyes off duty again and comes to eat worms from my hand at the oval lawn. This was a short watch. G.E. is not nearly so tame as B.E. and approaches hesitatingly. He went back toward the nest, but did not go up to it. I went up to the nest and found Brown-eyes standing up in it looking at the eggs, moving her head from side to side to get a better focus on each one individually. She reached down and moved them slightly with her bill and then settled patiently upon them again with sidewise oscillations. She does not mind my presence in the slightest. G.E. was in the glade showing no

disposition to take over operations, so I gave him a worm or two to see if he would take them to his mate and then change places. But he ate them all himself, so I returned to the nest. Brown-eyes was peering about and occasionally craning her neck over the rim of the nest, evidently looking for her mate, who by this time was prodding about the base of the tree. B.E. called down to him with a short, low, throaty chirp of about the same pitch and timbre as the call of the Western Blue-bird. G.E. came up at once and took charge. There was no appearance of haste or impatience on the part of either bird, both acting calmly and in matter of fact manner.

At 11:20 B.E. came through the fence below the glade where I stood, eager for food. I rested my hand on a piece of bark an inch or so thick, to hold it steady. I usually rest it on the ground. Brown-eyes had to look into this unaccustomed procedure and thrust her head underneath my hand as if to see what was holding it up, then resumed eating and, when finished, relieved G.E. promptly.

G.E. went directly to the oval lawn where there is always a supply of food, but I gave him worms too.

It looks as if an important factor determining the length of a watch is the time required for the bird off duty to get a good meal. If this tme is too long in the opinion of the bird on the nest, it appears from at least one instance noted, that that bird gives the signal for the change to be made; but there is no certainty of this.

At 5 o'clock I thought I would see if I could cause them to change by trying to entice away the bird that was on duty. I had not been there for several hours. Brown-eyes was on the nest and much interested in the worm that I held about 4 feet away. She was strongly tempted, but did not yield. As G.E. was down in the glade, I got him to come for worms about 8 feet from the nest. This was too much for Brown-eyes. She called once, but as her mate stubbornly refused to relieve her, she popped out of the nest anyway and came to eat out of

my hand without even looking to see if her mate would take her place. G.E. stood about 4 feet away and watched for a short time, then went dutifully to the nest and into it. B.E. kept on eating soft food, finally leaving to dig close at hand. She did not at any time even look at him or make any apparent suggestion, other than the one call while still in the nest, that it was time for him to get busy, nor did she appear to care or notice whether he went to the nest or not. It looked like deliberatley throwing up the job, although I suppose that there is some sort of an understanding between them. This is the longest time I have seen the eggs uncovered; about a minute I should say. However, it was my fault and not the birds'.

March 17th.

At 8A.M. Green-eyes on the nest, B.E. digging. As soon as B.E. saw me she started the chirping noted yesterday, ran to me and ate soft food, then started digging near my hand, switched back to w worms, chirping between worms. Finally she ran toward the nest carrying a worm, chirping as she ran, climbed up and gave the worm to her mate and then took his place.

She was off again about 9, coming to me in apart of the garden where the thrashers seldom appear.

(The quail have had a very bad fright this morning and now--about 2 hours after the initial scare--are still scattered all about the place, under bushes, in the oaks and pines and even on top of the roof. They are just beginning to call back and forth to eachother. It is estimated roughly that there about 30 here most of the time. At night they roost mostly in the oaks; in some cases within 3 or 4 feet of the windows).

At 12:05 Green-eyes was on the nest, his mate in the glade. As an experiment I went up to the nest and called to see if I could bring about a change of shift. B.E. came up and took charge in less than a minute, G.E. diving out and disappearing.

(Time not noted). Green-eyes on duty, Brown-eyes digging in the glade. The latter came at once on seeing me enter and had a big meal of soft-food, which appeared to make her very thirsty and she jumped into the middle of the drinking dish. As the water was shallow at the time it was necessary for her, on account of the curved bill, to turn her head sidewise in order to get it.

March 18th.

Sweeping lawn. At 6:50 A.M. one of the birds was on the oval lawn sweeping it lightly with sidewise movements of the bill. It is interesting to note that they have not put one hole in it for months, seeming to have forgotten their former efforts. They still dig vigorously as soon as they get off it.

At 7:40 one of the birds was on the nest, but the other could not be found.

At 8:30 Green-eyes was at the lawn eating the suet--chicken feed mixture. He came and took worms tossed to him, but was shy and edged off gradually toward the nest 175 feet away. I followed and noted B.E. leaving the nest before G.E.'s arrival, but the latter promptly took her place. About 10 minutes afterwards while B.E. was with me about 10 feet from the nest, G.E. began calling for her and she left the food quickly and went to the nest, G.E. diving out in usual fashion to date. So far, the bird going to the nest climbs up from the ground. This was the shortest watch yet seen.

At 9:05 G.E. was back at the lawn again eating the"pudding".

At 9:10 he ran down the road toward the nest, I following, and going up to the nest. B.E., in it, began a very low call. G.E. came up talking. B.E. opened her bill at him. Both left the nest, but B.E.was back again in the nest within about a minute, having gone down only to the ground beneath the tree. This was new behavior, for instead of changing, the same bird returned.

B.E. exam- Before settling down upon the eggs, she examined them very deliberate-
ines eggs. ly and poked around amongst them with her bill. There are still 3.

At 1:35 Green-eyes was in the glade digging. I went up to the nest and Brown-eyes began calling in an almost inaudible, short chirp. Green-eyes came to the nest with a large angle-worm which he did not offer to his mate, nor did she reach for it, but immediately dived out of the nest. G.E. stood on the edge reaching down into the nest, and it looked exactly as if she were offering the worm to the eggs as he dangled it over them. After doing this a few moments, he ate the worm and then squatted down on the eggs. The object in taking the worm to the nest is not clear.

The first egg laid has now been in process of incubation ten days: the second nine and the third eight. If they all have "fuses" of the same length, they should hatch on successive days.

March 19th.

Greenie on the nest at 7:45 A.M., Brownie across the road which runs by the north side of the old oak.

Brownie flew down from the bank, which is here about 5 feet high, and came on the run for soft-food from hand, then retired to dig at the top of the bank.

Here she unearthed a large China cricket and appeared much excited over the capture. She began pounding it on the ground and shaking it violently in her bill. Sometimes she would throw it as much as four feet, sometimes losing it temporarily amongst the leaves on the ground. At last it was in proper condition to be swallowed and she bolted it, a large lump appearing on her throat, slowly sliding downward. This is the first time that I have seen external evidence of food in the gullet.

At 9:15 one of the birds climbed up to the top of the highest snag

of the old oak and sang full song, alternating with periods of preening and stretching. Whenever another bird flew near, it would crouch down and lower its head and tail to the same horizontal line with irs back. Finally it plunged down into the thick growth about 100 feet away. As I had not been able to identify the bird, I spent 15 minutes following the bird about (instead of going to the nest to find out which one it was by elimination) trying to get it to come to me, but it was indifferent. At last it condescended to come and get a worm from my hand and it was Green-eyes. This bird has, therefore, at least twice, been seen to sit in high places and sing full song. While it is much more timid than its mate, as regards approaching me, it seems also that it is more independent and indifferent. To date its "sun-fits" have been the more grotesque and prolonged; one yesterday lasting perhaps 15 minutes. Part of this time one wing was held stretched straight up above it.

I built a staging this morning so as to be able to get still closer to the nest and have a more comfortable position. The work required a lot of digging, hammering, sawing, moving of small branches and so forth, very close to the nest. This did not seem to bother the birds much, but when the job was finished and I went up and offered the occupant of the nest a worm, it would only look sour. When I began snipping off twigs within an inch or two of its head, that was the last straw, and the bird slipped away. I don't blame it. This was followed by some scolding below and musical notes; Green-eyes appearing to have a good sun-fit and Brown-eyes coming to the nest with a large angle-worm dangling from her beak. This she "offered to the eggs" as her mate had been seen to do, then ate it herself. It almost looks as if the action were in some way connected with prospective hatching. Presumably the birds have no accurate measure of the time required for incubation, but their actions give the impression of some realization of the normal period's being about finished, hence the return to the nest prepared.

for that event. Or perhaps there is a vague association of ideas in which sitting in a nest, eggs and carrying of food are somehow linked together.

On this occasion the eggs were exposed for perhaps a couple of minutes--less if anything. In the afternoon the birds apparently had no recollection of the morning's episode. One of them looked at the structure from the ground with some show of curiosity and found that my digging operations offered a good field for exploration.

Green-eyes is by far the most "powerful" sun-fitter I have yet seen and, this afternoon, about ten feet away in the glade, he surpassed all previous performances. He usually starts these by first cocking one eye up to the sun and opening his beak,(reminding me forcibly of a similar attitude of a friend who used the method as a means of inducing a sneeze). The bird's feathers are stood on end so that the sun's rays penetrate down to the skin. In the case of Green-eyes I have noticed that these "fits" are often followed by periods of vigorous neck-scratch easily heard ten feet away. One wonders if the sunning has any connection with parasites. One would expect mites to look for protection from the sun and seek shelter, thus concentrating at points where, perhaps, the bird can get at them .

Brown-eyes came to me to eat worms and soft food this afternoon with three visitors standing nearby.

March 20th.

At 8:30 Brown-eyes on the nest, Green-eyes on the bank outside the fence. On call G.E. came up to the fence, reaching through it to clear a passage-way with his bill, but gave it up, as there were too many twigs in the way pushing him back. I moved to a place where they have a passage already cleared and he shifted there , coming to me for worms. His approach is more wary than that of

his mate. At times he almost crawls to me ready to explode at any instant. After each worm he retreats a shorter distance and returns more readily until he finally appears quite at ease, hanging around and sun-fitting.

Catching insects in the air. One of the thrashers yesterday, while on the oval lawn, jumped up into the air about four feet and caught some sort of a flying insect, put it on the ground and prepared it for swallowing. This is the first time I have seen them catch insects in this way.

An attempt to catch a lizard in order to note thrasher reaction towards the reptile failed because I caught it by the tail and it escaped by parting with that member.

10:00 A.M. Brown-eyes, off duty on the oval lawn, comes running for soft food. She is very fond of it and eats it contentedly from my hand. If I hold my hand by the side of the shallow tin box in which the food is carried, she will take it from hand by preference.

Active salivary glands. These birds must have pretty active salivary glands as their saliva often splashes on my hand when they shake their heads to rid themselves of some particle of food that has adhered to their bills.

External appearance. Their bills are not black, but more of a dull slate color. Looking down upon B.E's back at about 18 inches distance: her tail is somewhat darker than her back; her back is much darker than her sides and nearly all of the flight feathers have a lighter colored border at the tips. Her legs and feet are about the same shade as her bill. The superciliary stripe seems to be a sort of eyebrow, as it projects beyond the surrounding feathers. Until one sees one of these birds open its beak wide one does not realize how far back the opening extends toward and below the eye.

While it cannot, perhaps, be definitely counted upon as a characteristic difference, Green-eyes almost always carries his

wings less compactly folded, that is: more drooping and wider apart at the tips. Brown-eyes still has the misplaced wing feather which helps as a means of identification at a distance. (Jan. 10, 1934. This is still true).

G.E. looks me upAt 11 o'clock, while I was sitting on a box some distance from the thrashers' nest watching the wrens carrying lining material into the house furnished them a few days ago (both wrens working) Brown-eyes suddenly appeared looking for soft-food, then retired to a broom ten feet away and practiced her undersong. At 1:15 I was in another part of the garden watching the Plain Titmouse's evolutions about a deserted bird-house, when there was a flutter of wings nearby and Brown-eyes again appeared, looking bright and expectant--more grub and then off to the nest.

(Day before yesterday while sitting across the road from the oval lawn trying to entice G.E. out of the bushes into the road, I felt a slight blow on my leg and , looking down, saw a lizard which had jumped down off of a coat lying on a rock beside me. It jumped down from my leg, ran out into the road, picked up the worm intended for G.E. and returned to the coat with the worm sticking out of its mouth like a cigar. It seemed to make no effort to swallow the worm, but the latter gradually disappeared down the lizard's throat. The lizard must have seen the worm at a distance of about 3 feet).

Mr. Sampson and I sat in the glade for an hour watching B.E., who was very friendly and stayed near us most of the time digging and coming to eat from hand. We dug up various things for her. Angle worms she inspected but rejected. Termites to which her attention was directed by dropping a meal worm near them were eaten readily. Argentine ants were scraped aside with the bill, but the pupae were eaten when uncovered in the course of her own digging.

The first egg was laid on the 8th. I am reasonablycertain that it was in the forenoon. Incubation began with the first egg.

In fact it might almost be said that it began before the laying of the first egg, during the time they were "thinking" in the nest.

...garding ...liminary ...g sitting.

(One wonders if this preliminary nest-sitting and changing of shifts may not have served as a training period during which incubation routine was standardized and systematized so that there might be no mistakes and misunderstandings when the time arrived to put it into effect seriously). At about noon, therefore, they completed the twelfth day of incubation,

...k's state... ...ation ...ried.

Mr. Brock says that the first egg laid should hatch, if incubation has been continuous, in the forenoon of the thirteenth day, and each following egg one day later.

On this basis, one might reasonably expect one egg to hatch tomorrow. We shall see what we shall see.

March 21st.

At 7:45 Green-eyes on the nest, back and top of head all in a straight line; tail projecting upward at an angle of 45 degrees, looking very comfortable. Brown-eyes in the glade, as Julio said: "All mixed up with the quail."

At nine o'clock Green-eyes was down in the chaparral on the bank, but would not come up on invitation, although he looked as if he wanted to. I went up to the nest and offered Brown-eyes a worm which she would not take. I pushed it against her bill, but she would only blink and look at me in a wooden sort of way. She did not cringe or manifest signs of fear or hostility. G.E. appeared in the glade below digging vigorously. Worms were dropped down to him hoping that he would bring one up to the nest for his mate and give me a chance to see whether there were any new developments without disturbing the occupant. For a time it seemed if this system would work, as he began to chirp and approached with a worm, only to swallow it. B.E. began to show interest in his movements and

he finally climbed up and took over--three eggs and no young. Brown-eyes dropped down into the glade and immediately began to show interest in me; looking up and calling softly. I showed her a worm and she crouched once or twice as if to fly up to me--about 10 feet to my hand- but did not do so. So I climbed down and she ran up to me as friendly as ever. Three minutes before she was as remote in spirit and as cold as the Arctic regions. Now she was all friendliness and confidence, ignoring the open box of soft food beside my hand, choosing to eat from the smaller supply in the latter. I have noticed that she will often take one mouthful from the box first and then turn to eat out of hand thereafter, paying no further attention to the box. I suppose this is not because of amy fondneee for me, but because eating from hand is the established routine.

On the next change of shift, or rather: about as the next change was due, I fed Brown-eyes liberally to see if that would have any effect on her attitude toward worms when she reached the nest. However the moment she climbed in, she lost all interest in worms and ignored one which I thrust against her bill.

At about 4 o'clock there was another change of shift, B.E. coming off duty. Still three eggs.

March 22nd.

At 8:20 P.M. Brown-eyes who had just been having a hearty meal of soft food and meal worms on the ground in the glade, exchanged places with her mate. There were still three eggs in the nest. As I was about to turn one of them over with the tip of a finger, Brown-eyes settled on eggs, finger and all with perfect calmness.

At 11:40 Brown-eyes on the nest, Gre n-eyes appeared shortly in the glade. By giving him plenty of worms I hoped to induce him to take over the job of incubation. Soon he began to chirp softly

(the signal to his mate that he was about to relieve her) and she began to peer about. This is now the usual procedure. As the [illegible] eggs were uncovered for a moment and there were seen to be still three. This completes fourteen days of incubation for the first egg. (Assuming that incubation is carried on at night also).

At 4 P.M., Brown-eyes on the nest, Green-eyes was induced to take over by giving him so many worms that there was nothing left for him to do. Still three eggs. Brown-eyes was sleepy on this shift, frequently closing her eyes; the first instance noted, showing that the bird on the nest does not always have all of its faculties alert.

6:05. Brown-eyes on shift, Green-eyes nowhere to be seen. Mrs. Wheelock says 14 days incubation; Mr. Brock 15. (may 1938 - found at 16 days)

March 23rd.

Green-eyes off duty at 8:15 A.M. in the glade, her mate on the [illegible].

12:05P.M. As Green-eyes came off and Brown-eyes stepped in there was no external visible evidence of the eggs having been subjected to 15 days of continuous incubation. Brown-eyes made a careful examination of them before covering them.

1:55. G.E. in the nest, B.E. in the glade below. Fed the latter till she had had enough then went up to the nest to watch the expected change. B.E. came up and sat on the rim of the nest, but G.E. did not think it was time to change and refused to leave. I wriggled my fingers under his chin and he got off reluctantly, exposing 3 eggs before his mate settled upon them with much fluffing of feathers and sidewise oscillations to insure that the eggs should be thoroughly imbedded in ht efeathers and against the warm skin.

[illegible] eat, shortly thereafter relieving her mate. Still 3 eggs. G.E. in

in settling in the nest finally ended with her back toward me, but an arm's length away.

March 24th.

At 8 Brown-eyes on duty. At 9:05, Green-eyes. Fed B.E. and she came up to the nest and took charge at 9:15. There were still three eggs in the nest. 16 days incubation.

11:40. As Brown-eyes replaced Green-eyes there were seen to be still 3 eggs.

At exactly 2 P.M. I was on the platform, Green-eyes on the nest. This bird usually faces S.W., that is: diagonally toward the platform. I went down into the glade, Brown-eyes immediately coming to me. For the next 25 minutes she was never farther away from me than 10 feet--usually closer--eating food from hand, jumping up to take worms from between thumb and forefinger held about 18 inches from the ground; digging in the earth, overturning stones and slabs of bark; under-mining one of the supports of the platform; pecking at nail heads; preening and stretching with occasional glances up at the sky and toward the nest. I took a dried blossom stalk of the soap root about 2 feet long and ¼ inch in diameter and tapped her on the back to see how she would react. At first she gave it no attention. I tapped harder; she merely opened and closed her wings. I tapped her still harder; she turned quickly, seized the stalk in her bill, shook it and threw it violently from her, then advanced a few steps toward me and looked up into my face. At no time did she retreat or give evidence of fear. She was clearly annoyed and knew who was responsible.

I went up the ladder; she came to the bottom, looked up and tapped things with her bill, then climbed up to the nest, Green-eyes turning his head toward her, opening his bill and "bubbling" then stepping out of the nest. There were still three eggs.

Brown-eyes stood over them and probed about with her bill before settling. They were in view 9 seconds by stop-watch. This bird frequently faces in the direction opposite to that of her mate and does not at all mind turning her back toward me and not watching me. The eggs are not quite centrally disposed in the nest, but off center toward the S.W. In this position Green-eyes has them pressed more against the breast and Brown-eys more aginst the belly. On the previous shift I had thought that the latter had appeared to study the position of the eggs deliberately and that turning her back on me was merely incidental to bringing her belly in contact with the eggs. Her mate, who is much more timid in my presence, seems to consider it a good plan to keep an eye on me, eggs or no eggs.

I pushed a worm against his bill this morning and his neck was as stiff as a post.

March 25th.

A cold, gloomy morning, rain threatening. At 7:50 Brown-eyes was on the nest. While I was looking for G.E. he suddenly appeared at the nest and took charge before I could look into it.

At 10:25 Green-eyes on the nest. Fed Brown-eyes in the glade and went to the nest, the bird arriving as soon as I. As she took charge she looked over all three carefully. This time she faced south; wind and rain were coming in from that direction. This is practically the end of the 17th. day of incubation, counting from the time that incubation was started on the first egg and assumi ng that the process continues throughout the night, which of course it does. For the last egg laid it is 15th. day.

"If, when and as" the first egg hatches, as the eggs were not marked, it will not be possible to tell whether it hatched in the order of its being laid or not.

I believe the first egg to have been laid at 11:40 A.M. Mar. 8th. I know that it was laid before 2:40 P.M. of the same day and that incubation commenced at once.

I have visited the nest perhaps an average of 8 times a day since that time, or say, 120 times and, with the exception of the one minute period on the 16th., and the less than 2 minute period on the 19th. (both estimated and both caused by acts of mine) I have not seen a time when there was not either a bird on the nest or one ready to step in. I have not looked into the nest after dark as I do not care to risk disturbing the birds under those conditions. Certainly incubation has proceeded faithfully.

2:40 P.M. Still three eggs. They are now on the 18th. day of continuous incubation. I wonder if the eggs are fertile. If they are this surpasses anything I have read or heard mentioned as to the time required by thrasher eggs to hatch.

At 5 P.M. Green-eyes was on the nest. Apparently he has no firm conviction that anything is wrong. It was no longer raining. I went down into the glade and Brown-eyes came for soft food, pausing occasionally to peck the drops of water off of the ends of the sage brush twigs.

As I went up the ladder to the nest she followed in the expectation that I would drop worms down to her, as I often do to encourage her to take over operations. However I had no worms and after looking up at me repeatedly, she finally came up to the neest, Green-eyes opening up his bill as usual and "bubbling".

There were still no young birds in the nest. B.E. examined the eggs very carefully and turned them over with her bill. The curved bill is an excellent implement for this purpose, as

as the tip is easily pushed under the eggs and the eggs pried up. After this inspection she picked some invisible object off of the lining and then "rubbed" herself down upon the eggs more energetically than I have seen her do before. In a few moments she went over the whole process again, carefully. If she were a human being I would say that she is getting anxious about the outcome.

but the birds do not

The nest appears damp, with the exception of their tails which look quite archeopteryxtic. The nest location is not a good one when the wind is southerly. The slope of the ground to the south tends to give the wind an upward trend and I can imagine it filtering up through the nest carrying off the B.T.U. from the eggs.

March 26th.

At 7:50 A.M., after a night of hard rain, Brown-eyes in the nest looking dry and comfortable.

At 9:20 Brown-eyes in the nest. I went down into the glade. Shortly there was a succession of call notes sounding like those of the western blue-bird and Green-eyes walked out of the bushes and came to me for food quite like his mate. When I climbed the ladder he came to the foot of it and I dropped worms to him. When he had had enough he gave the blue-bird call again and came up to the nest bringing a worm with him. (Expecting young?) Brown-eyes dived out of the nest and her mate inspected the three eggs, settled upon them and then swallowed the worm. Brown-eyes was waiting at the foot of the ladder, so I went down and gave her soft food and worms.

The last day or two, when eating thus, she has frequently looked beyond me directing her gaze along the ground as if suspecting an enemy. I have repeatedly turned to look, but all I have been able to see that might be suspicious is a brake here and there stirring in the gusts of wind that have lately been coming into

After eating from my hand, Brown-eyes flew up into a small oak, and made a survey of the surrounding country and then returned for more food. Green-eyes in the nest suddenly called (the first few notes of the Thrasher song), Brown-eyes looked up and started for the nest. I did likewise. Looking at my watch, it was not quite 9:30. As I watched the nest ( 18 inches to two feet from my eyes) Brown eyes climbed into it on top of Green-eyes, who opened his bill and "bubbled", touching his mate on bill and cheek. She felt under him with her bill and they "talked", Brown-eyes hovering him just as if he were a young bird, he mildly protesting. At last nothing but his head and beak showed out from under her. Occasionally he would nestle down even more closely to the eggs and she would spread herself out even more and have to close one eye to keep from getting her feathers in it. (It looked exactly as if Green-eyes had called for more steam to be turned on to the "radiators" as if he were either too cold or thought the eggs were, so called for help. They remained quiet for several minutes, then Green-eyes squirmed and began "talking" and touching his mate on bill and cheek and pecked gently at one of her eyes (which she closed) as if telling her he was roasting or was having the breath squeezed out of him or something; but she would not leave until she was ready. This "double incubation" lasted 15 minutes by the watch. Naturally I wondered if this episode might not be an accompanying feature of the hatching off an egg, but there was no way of finding out without disturbing the birds and this I do not care to do. It is noted that there was no change of shift here, there were no enemies in sight and the call came from the nest. In all but one or two instances, the signal for change of shift was given by the bird on the ground. This almost completes the 18th. day of incubation for the first egg.

11:30 ~~At~~ I have watched the nest continuously since 10:45. At that time Brown-eyes was on duty and Green-eyes had come to the foot of the ladder looking up at me for some. I tossed him a few and he came up to the nest. Brown-eyes stood up in it revealing three eggs. They both inspected them, Brown-eyes fumbling them with open beak and pecking very gently after which she settled on them firmly and Green-eyes disappeared. Brown-eyes then became very sleepy, yawned, rested her bill on the edge of the nest and closed her eyes, opening them from time to time at some unusual noise or disturbance of the branches. Talking to her did not disturb her. Until 11:25 she had a succession of naps and, at intervals raised herself slightly in the nest and probed well underneath herself with her bill, firmly settling after each probing. At 11:25 Green-eyes appeared in the glade and his mate began to show signs of restlessness, turning her head from side to side toward the direction from which Green-eyes' rustling in the leaves on the ground came. She then stretched her neck to its full length without rising from the nest and peered over the edge toward the ground. I said to her:"Call him, Brownie and maybe he'll come". It almost seemed as if she understood, for she almost immediately broke out into the first dozen or so notes of what seemed to be the typical thrasher song. Her mate immediately came to the nest and took charge. He made no preliminary inspection, and settled quickly with the same movements as his mate, but less thoroughly and deliberately. Still three eggs after 18 days of incubation for one of them. If the fewcocowic I was seen and correct, it looks as if a favorable issue need not be expected. If they do not hatch, it may [illegible] that the eggs were sterile in the first instance; but if fertile, then my first guess would be that failure to hatch was due to the upward stranding [illegible]

might be ascribed to the chilling wind passing upward through the bottom of the nest.

Brown
Green-eyes left the nest from 4:45 to 5:30, ~~Green~~-eyes being its occupant during all of this period. She dozed frequently, closing her eyes and resting the end of her bill on the rim of the nest. When she naps her respiration is slower and deeper. It varies between 60 and 70 per minute while sitting quietly in the nest, but drops to about 50 when she dozes.(This is from one set of observations on which only). With no previous experience to base an opinion, this impresses me as being slow for a creature with such active life processes. Her hearing does not appear to be any more acute than mine(for sounds within the range of frequencies perceived by the human ear). I can, of course, only judge only by noting to essentially what sounds she reacts. Near the end of a shift she is on the alert for signs of the approach of her mate and very visibly reacts to both accidental and intentional sounds made by him by some movement of the head, such as turning it to locate the source of the sound or to look for him. Frequently I hear him before she shows any signs of having done so. For example: He may make two sweeps with his bill in the dead leaves in the plate below on his return from a foraging expedition, before coming to it. She may react to his flight, or to his arrival only, or to both or neither, even when she is manifestly on the lookout for his return. This, of course, proves nothing, as she may be hearing him all the time without reacting physically.

When Green-eyes stepped into the nest at 5:30, he looked over the eggs rather casually, more, it appeared, to see what had happened during his absence than to investigate future prospects. He did not touch them with his bill, settled much more gently and less firmly than Brown-eyes does and spread out his feathers much less. As usual, he faced south directly o[illegible] a to Brown-eyes' usual facing. This is almost characteristic difference when the wind is in the south, as it has been.

for the first couple of days. He sits there sleek and composed whereas his mate has her feathers ruffled by every gust and her tail sometimes turned up to the vertical. ~~Xxx~~ Three eggs.

At 6:45 there was no wind and I went out while it was still light (Air temperature 55 ) to see if, perchance, both birds might be occupying the nest at night approached. (The [illegible] one to roost in the oaks, although some other birds were still active). Judging by the position, Brown-eyes alone was in the nest. I could easily settle this question by going out after dark and shining a flash-light on the nest, but I do not wish to risk frightening the birds, especially at this time .

Mar.27 Green-eyes on the nest at 7:45.A.M. Brown-eyes took over at 8:05. Three eggs. Strong wind from the south. 55 degrees.

12:20 Green-eyes has been giving a concert down on the bank outside the fence. There are still three eggs in the nest. 19 days of incubation.

At 5:20 I went to the nest and neither bird was in it. It looks as if they had given up. This is the first time that I have gone to the nest and found it unoccupied.

6:05 One bird on the nest again! Hope they haven't given up/. When I found them uncovered they were dry and, I should judge, about the temperature of the air.

March 28 At 8A.M. neither bird was in the nest and the eggs were cold after a night of rain. I went down into the glade and began calling. Soon both thrashers answered;"Scrip, scrip, scrip-scrip" from about 100 feet away and Brown-eyes ran rapidly toward me, refusing, however, the proffered worm and climbed up into the nest. When I got there she was sitting in it hopefully. She refused a worm. I laid it on the nest along side of her bill; but she would not look at it, so I left. When it is certain that the eggs ~~are~~ will not hatch I shall open them up to see if they may possibly have become sterile in

the first place. Brown-eyes still hovers the eggs, but leaves when she feels like it, whether her mate is there to relieve (although I have not actually seen her leave the nest) her or not. At 12:30 she had been off the nest for about ten minutes leaving the eggs bare.

At 1:30 there were no birds in the nest. I was feeling about in the nest to see how dry it was, when Brown-eyes appeared on the edge of it and when I partially withdrew my hand she sat on it without hesitation. I withdrew it and after a few moments reached out and touched her on the bill and the head. She did not cringe or show fear. Green-eyes was below in the glade, very friendly. I have not seen him stand watch today.

Brown-eyes was on the oval lawn at 3:15. I gave her worms and then went to the nest. Three cold eggs. However this did not discourage Brown-eyes, for she appeared almost at once and climbed up the tree and into the nest. I had just fed her about a minute before 175 feet away, but but in the nest she would not pay the slightest attention to a worm. At 5:30 I was working in the orchard. She appeared and came running and half flying to eat a hearty meal of soft food; Green-eyes watching from a few feet away, neither offered to take food nor to take a turn on the eggs. As far as I can see, he has definitely struck. His mate, however, is still full of optimism. After she left I went to the nest and found her on it. I think that there is little doubt of Brown-eyes' being the female, as she is consistently called in these notes. Green-eyes spent a large part of the morning practicing his undersong.

March 29 At 7:30 Brown-eyes sitting placidly on the eggs. She has evidently not given up hope.

9:45 Brown-eyes in the nest. (I wonder, if I should take her eggs away from her, whether she would lay more in the same nest.) Whenever she is off of the nest and I feed her, she goes back

again. This happened twice in the forenoon and once in the afternoon. At 6:30 (after sunset) I went to look into the nest. Deserted. However, Brown-eyes appeared from nowhere in a few seconds, inspected the eggs and then stepped in. Earlier in the afternoon she was v ry hunger. Green eyes watched her eat from a distance of six feet. I gave her worms to end up with. She carried two of them in her beak for a time. It looked as if she would bury them; but finally she walked up to Green-eyes and gave them both to him, but came back to me for more and then went to the nest. She did not feed him as a young bird is fed, merely went up to him and waited for him to take the worms one at a time from her beak. He took them without any show of haste.

Mar. 30 At 8 A.M. the eggs were stone cold, no birds in sight. Brown-eyes soon appeared in the glade and I gave her worms. She showed no disposition to go to the nest and appeared to be looking for her mate. However, when I went up to the nest she came too, made an unusually long and careful examination, picked invisible objects out of the nest, turned the eggs over inserting her bill underneath them, ~~and~~ prying them up. In doing this she almost stands on her head. At last she settled down on them. At 9:45 the nest was empty except for the eggs--the eggs cold. . . ... I opened one of them. Not the slightest sign of an embryo. It was opened at the large end and it was noted that the air pocket(?) was very large. The contents were very fluid, the yolk broken. No odor of decomposition. Yolk of uniform color, light yellow with no bloody streaks. It apparently had not been fertilized. Both birds very friendly and beginning to "talk" to me again. She did not go to the nest this time when I went there. ( Juncos have practically finished

dirt under a small huckleberry beneath the oak in the attic.

I saw them making regular trips back and forth as I looked from my bath-room window this morning. )

( Known nests here now are: Thrasher, Vigor Wren, Plain Titmouse in his regular house--this will be the eight year in succession--Bush-tit, Junco.

Known to be nesting: Allen's Hummer--probably finished weeks ago--California Towhee

Suspected: Spotted Towhee, Wrentit, Song Sparrow, Purple Finch

At 4:30 both birds in the chaparral outside the fence. Brown-eyes came through first after trying several places unsuccessfully . I sat on a low stone wall and she came up beside me to eat soft food. After that she went up in the tree overhead and answered my whistle with a song. Whenever she stopped I would whistle an attempted imitation and she would sing again. This was repeated eight or ten times. This was full song. I went to the nest, but she did not follow. She seems to take her "bereavement" philosophically now. Green-eyes lost all interest in the nest, as far as I can see, when he first refused to take his turn.

It now remains to be seen whether they build another nest and where. From their fondness for my artificial "chaparral" on the bank outside the fence, I would not be surprised if it would be there.

March 31 At about 8 I went out to see where the Thrashers were. One of them-Brown-eyes it proved to be--answered from the chaparral and came through the cut which they have made to make it possible to get through without climbing over. When she was through and running toward me she saw a nice looking twig about a foot long, picked it up and went back through the fence. I went down to see if this meant another nest, and,

sure enough, she was adding it to five or six other twigs already placed there. It is in a kangaroo thorn (Acacia ~~plain~~ view from the sidewalk. It will get all of the south wind there is, and if I visit it frequently, it will be well advertised to the general public and to the small boy in particular. While outside the fence, this bank is a part of the propрty. I had intended to mark the individual eggs of the second batch, if any, to get a definite determination of the incubating period for each. Owing to the location of the nest, this may not be feasible. The birds showed no nesting activities yesterday and it is pretty certain that the present structure was started this morning. The last attempt to hatch the old eggs that was witnessed was yesterday morning at a little after 8. It will be seen that it did not take long to start all over again. (Looking out my bath room window early this morning, I saw a song sparrow carrying nesting material into a ~~prostate~~ prostrate Juniper in the court. In the court now are three nests located roughly at the points of an equilateral triangle of about 20 foot sides, viz: Junco (On the ground), Plain Titmouse (In a house in an oak about 9 feet from the ground), Song Sparrow ( In the flat Juniper practically on the ground. This about 8 feet from where I usually lunch out of doors. Yesterday I suspected it and looked through the Juniper, casually, but found nothing). (This is the first Song Sparrow nest I have found here). (I can stand at one point and see the nesting activities simultaneously actions of these three kinds of birds going on within about ten feet of me. The linnets, whose nests I have never found here, are very much taken with the sunflower feeding station recently put up in the court. It is strange that so common a bird everywhere has appeared to avoid nesting here. I hope now

they will no longer ignore the advantages of this place. The purple finch, reputed to be wilder and more given to nesting more remote from dwellings, nests here every year).

(Birds whose nests have been found ~~hat~~ my place since I have lived here, beginning July 1927:

1 Plain Titmouse
2 California Bushtit
3 Spotted Towhee
4 California Towhee
5 Western Robin
6 Purple Finch
7 Wren Tit
8 Vigor Wren
9 California Thrasher
10 Junco
11 Lazuli Bunting
12 Lutescent Warbler
13 Song Sparrow
14 Goldfinch Greenback(?)
15 Hummingbird (A used nest, not identified)
16 California Quail
Apr 1933 17 House finch - Linnet (See Apr 30

Birds seen gathering nesting material here

1 Allen Hummingbird (Spider webs, plant down, yarn
2 Anna " ( " "
3 Chipping Sparrow
4 Gambel "
5 Flicker (Drilling hole in dead limb which later broke off)

For birds that skulk about the bushes, these thrashers are surprisingly open and trusting about their nesting operations. I was practically shown by them where the first nest was, by having one bird pick up nesting material right along side of me and carrying it directly to the nest, which I had not previously seen , about 8 feet away, with no attempt at taking a devious course or concealing its movements. Again, this morning, as noted, when Brown-eyes came through the fence in response to my call, she picked up a twig within about six feet of me and carried directly to the new nesting site, abandoning temporarily the food idea, but returning almost immedi-

ately to me, alternately eating and picking up twigs. Just now, at 10 o'clock, she has been alternately eating soft food from my hand and jumping into the drinking vessel along side of me and making deep, rich, throaty "talk". It appears that they are going to take their time about this nest also.
(Fox sparrow and Hermit thrush still here). (Spotted Towhees have been doing a lot of complaining for the last week or so).
12:30 About 7 feet from the new nest there is a Deerbrush Ironwood (Fremontia Californica). It was originally surrounded by a small irrigating basin ~~to hold water~~. This has now become a small bench with a bank on the upper side about 16 or 18 inches high. About 12 , looking down the bank through the fence, I noticed Green-eyes jumping down on it to this bench, up again, circling about it, peering down over the top, etc. He appeared quite excited. I went down and stood ten feet from where he was performing these evolutions. There is a gopher hole in the bank noted. It is this hole which has Green-eyes so excited. While I watched him he continued these antics, crouching low to the ground and peering into the hole from a point as near as he dared to go. His tail feathers were widely spread and from time to time he would raise his wings and stretch out his neck to its full length toward the hole. He looked more road-runner-like than ever. While he was conjuring up some bogey or other, Brown-eyes appeared quietly on the edge of the bank, giving Green-eyes a bad fright. He returned to his doings, however, and Brown-eyes gave him one good sound peck, then looked into the hole herself with no special interest. G.E. kept this up, I should say, for fully ten minutes; B.E. following him about more or less trying to attract his attention, then going to the new nest; finally both left and when I got back to the house, were feeding at the oval lawn.

There will be times when they will get well roasted at the new location. The nest has progressed rapidly, although taey do not seem to work very much.

About 6 P.M. I gave both of the birds a good feed, Green-eyes being very tame for him.

April 1st. 8 A.M. Both birds working industriously on the nest. Brown-eyes came through the fence promptly in response to call. She jumped up on my hand with her cold feet in order to get at the food better. It is rather surprising how heavy she is. She then attempted to drag a very large twig through the fence, but had to give it up. The chaparral bank is ideal thrasher territory and the Kangaroo thorn possibly is thorny enough to ~~discourage~~ offer some discouragement to outside interference.

Green-eyes is getting tame again--that is, when he feels like it. He came up beside me where I sat on the low wall, to eat from my hand quite like his mate, this afternoon. Both had a good feed about 6P.M. They are quite busy at the nest, getting much of their material in the glade and carrying it through ~~the fence~~ their special passageway in the fence. The [illegible] obstructed with twigs that they have been compelled to abandon.

April 2nd. At 7:30 this morning the thrashers would not look at me. They performed various evolutions in the tree tops--higher decidedly than their regular zone of operations--chased each other around the bushes and burst into short snatches of song. They were decidedly living, for the time being, on high plane of fervor. ~~8:30~~ Brown-eyes ~~One of them~~ tried to ~~carry a huge~~ with a huge branched twig over the fence t[illegible], but it got [illegible] and fell about eight feet to the ground. I went out again at 9:25, at which time they had come

down to earth both figuratively and literally and were as placid as cows. Brown Both came through the regular passage-way when they heard me and, even before I displayed any food, Brown-eyes was up on the wall beside me waiting for it. (In the last few days a wave of irresponsibility has swept over the creatures here. One of the Bull-frogs in the pool, yesterday caught a large gold-fish right before my eyes, but could not hold him. His companion was up on the rocks above the pool, stalking a Song Sparrow. There can be no doubt of his intentions. When I went out at 7:30 Julio (Holio) was watching the thrashers and averred that they had just chased a rabbit (very plentiful here) out of the brush. Still earlier, the quail were walking in pairs on top of the roof and searching for nesting sites among the azaleas(now in full bloom)in the garden below. One male was uttering his single-noted guardian call:"Kah". Yesterday a lizard challenged Brown-eyes--18 inches away, ~~but~~ B.6. looking at him without interest--by flattening himself in a vertical plane, doing setting up exercises and making a pouch of his throat. When he finally scuttled away, she merely stretched herself upward and watched him run without offering to follow. The Plain Titmouse was "laying carpets" in his house( Tapping inside to loosen shreds of wood--a standard performance). The Gold-fish were spawning in the roots of the Wat er Hyacinth. I tossed a water-dog into the pool (Newt, Salamander) and they chased it, but it escaped).

Lining the nest has been the order of the day with the thrashers. A warm day, 80 in the shade. It seems to make no essential difference to them what clothes I wear, when I offer them food. Today, working in the shop and the garden I wore white duck trousers (more than 30 years old!), white shirt and

no coat or waistcoat. Brown-eyes, coming through the fence and standing in the dense shade, stared at me a few moments. In the brilliant sun I must have looked like a search light, but she trotted over to me and ate peacably.

April 3rd. At 8:15 this morning both birds were so busy carrying ~~kimi~~ soap-root fibre into the nest that neither would look at my offerings, although, in order to get through the fence by the shortest route to the nest they had to pass within a few feet of me. It is curious how far these birds will run along the ground to reach a definite objective instead of flying. Green-eyes appears to have forgotten all about the spook in the hole in the bank.

(A Purple Finch was singing loudly about 6 o'clock in an oak by ~~ax balcony~~ my sleeping porch. While I was trying to find it, it came out of the mass of foliage and sat facing me in the open about six feet away, continuing its song. I could look directly down its throat. This bird had no red on it all. ( I wonder who named them "purple"). Do it the old classical purple?

An hour later Brown-eyes needed no urging to come and eat. The nest must be practically finished as the last fibre carried into it was an almost invisible thread. According to precedent they should begin to "think" in it very soon. In a horizontal line it is about three feet from the sidewalk and about 7 feet higher. Automobiles pass within about 20 feet of it.

10:00 I opened the remaining two eggs in the old nest. They were in the same condition as the first one. There was no offensive odor. Evidently all of them were just plain duds.

April 4th. At 8:30 Brown-eyes after eating, attacked a soap root bulb savagely tearing off the fibre in sheets, but took only three very fine threads up to the nest, where she was

almost immediately relieved by our mate who scanned it a little
harsh. Brown-eyes then dug small stones out of the bank and
let them roll down to the sidewalk, now and then coming out fear
for a worm. A little later both birds were very busy carrying
lining material in large quantities to the nest. Most of it
was found in the plaza and carried through the favorite
in
passage through the fence. They worked very closely together
and on their return trips frequently came through the opening
at the same, particularly one of a two-car train coming out of
tunnel. Although Green-eyes knows soft food very well by this
time, having eaten plenty of it, he is still somewhat puzzled
as to what should be done about it when I hold it out to him.
It looks as if he thought that there should be only worms
there, as he frequently examines it carefully and takes only a
peck or two, then looks about as if something were missing.
This morning he repeated this performance and then tried
to swallow one of my finger-tips. He then noticed that there was
piece of oak bark
a short, thick stick upon which my hand was resting, so it
became necessary for him to dig that out. Brown-eyes, during
soft food
this performance, having had enough for the time being, was
digging about three feet away in the waste lumber soil
was covered with fragments of bark and leaves. She made so large
and deep a hole that she got entirely below the surface of the
ground and had to lift out the larger fragments by picking
them up with her bill instead of sweeping them out.

They worked steadily on the nest for about two hours in the
morning, repeatedly passing within a few inches of a lizard
sunning himself on near their trail. They occasionally glanced
at him, but did not offer to molest him. A little later,
however, Brown-eyes saw another lizard run into a crevice
in a low stone wall and spent some time probing about for him.

So far, their attitude towards lizards appears to be one of curiosity rather than of hostility.

Owing to my absence, no observations were made during the afternoon.

April 5th. At 7:45 A.M. both birds came to feed on being called, having come from the vicinity of the oval lawn. The water was shallow in the drinking dish and both birds, in order to get it, had to step into the middle of the dish and turn their heads sideways. ( Quail's nest in court, three No eggs. Song Sparrow's nest not yet finished ..Ribbon all balled up! ) (Quail nest right in the corner of the house under a rhododendron --no water for this plant, now for a long time!) (Julio says he saw them making " a round hole there last Monday" That would be March 27th. Referring to notes of Mar.30, this adds the fourth nest within the 20 foot triangle--all different kinds. Most of this household's going to and fro pass through this area. Rather a public place for nests). Known nests here at present:

Vigor Wren,
California Thrasher,
Plain Titmouse,
California Bushtit,
Point Pinos Junco,
Alameda Song Sparrow,
California Quail )

Brown-eyes has a perfect imitation of the call of the robin; not the "Kwee, chuck, chuck" one, but the "whinnieing"one. She has sat within a few feet of me and mixed it in with her undersong so unexpectedly and ventriloquially that I have looked to see if there were robins around . It is very deceptive.

rabbit was killed instantly and subsided without a struggle.

Almost immediately Brown-eyes appeared running toward the rabbit, which she inspected, by actual timing,

April 6th. No eggs up to at least 12:30 at which time nest was was unoccupied.

(Something has destroyed the quail and Junco nests in the court. The Junco nest was completely torn to pieces. Found an egg nearby, restored the nest and put the egg in. It now remains to be seen what happens).

April 7th. The birds appear to be now undergoing the thinking phase which precedes the laying of the eggs. At 9 A.M. one of them is sitting in it without moving about.

The Junco nest is again destroyed and the egg gone. I suspect the Stellaer Jay which is very plentiful here and prowling around a lot. Saw one go into the bushes where this nest is.

At 9:55 Brown-eyes took the place of her mate on the nest.

At 11:45 There is a bird on the nest. So far this morning I have not seen both birds at the same time except on change of shift. Yesterday they came and ate together several times. This morning appears to mark the beginning of continuous occupancy of the nest. Brown-eyes appeared at the oval lawn, having just had a good soaking bath somewhere. This means Green-eyes on the nest.

At 2:30 Green-eyes off duty. (This does not mean that there were no changes in between--there probably was at least one). G.E. still creeps up like a mouse to get worms.

April 8th. Brown-eyes on the nest at 8:15. Green-eyes came for a good feed of worms, being much bolder this morning, then took charge at the nest.

At 12:15 I shot a rabbit, which has been destroying my grape vines near the glade. There were no birds in sight at the time. I used a BB cartridge, so there was little noise. The rabbit was killed instantly and subsided without a struggle.

Almost immediately Brown-eyes appeared running toward the rabbit, which she inspected, by actual timing,

4½ minutes. She was followed by a pair of Spotted Towhees and then by a pair of Wrentits. When she left I xx crouched down by the rabbit and called her, displaying food. She came at once without sign of fear and ate from my hand, the muzzle of the gun being about six inches from her head. She did not look at the rabbit again and appeared tp have forgotten all about it. There appeared to be nothing in the episode to excite her fear or to cause me to be associated with it in her mind in any disagreeable sense. The birds are now standing regular watches on the nest and do not leave it unattended at any time. Green-eyes is very sleek, but Brown-eyes is showing signs of wear; besides having her body feathers more or less ruffled, she has one tail feather broken and projecting at right angles to the rest, so for the present, at least, they may be distinguished at a considerable distance. Green-eyes comes to eat more boldly now and hangs around longer. At about 2 O'clock, after eating all the worms I had with me, he took one down to his mate and she came promptly up through the fence. She now knows that I carry the worms in the little tin box and shows much interest in it at times.

April 9th. At 7:30 A.M. I wounded a jay and, while looking for it, Brown-eyes appeared, apparently looking for it also ! I gave her soft food and between pecks she kept looking up into the oak overhead and then ran a few steps away and stared fixedly up into the oak. I looked up and there was the jay sitting, without moving, on a limb, making no sound. I shot it and Brpwn-eyes ran to inspect it! It looks as if one of her ancestors must have been a bird-dog!

Wrens are now building in a bird house in the court. It may be the same pair xx that has the nest in the house first noted as the wind blew the top off of that one and they may have deserted it, although the nest is intact. That makes five

kinds of nests in the court. The nests of the junc and the quai are but 18 ~~inches~~ 24 apart. The former seems permanently destroyed; the latter seems to have been repaired, although there are no eggs in it).

April 10th. At 10:20 A.M. as they were changing shifts they disclosed three eggs. As there were none on the 7th this means that the first egg was laid on the eighth and one this morning before ten twenty. It is rather curious that the first egg of each batch was laid on the 8th. of the month. If the incubation period is thirteen days for the first egg, with continuous incubation as Mr. Brock thinks, the first egg should hatch April 21st. Green-eyes was on the nest before change of shift. I went up to the tool house where there is a clump of bracken where the Spotted Towhees usually nest and looked down into it in passing. ~~This is a~~ In the ferns within an area equivalent to that of a circle of three feet diameter were :

A spotted towhee carrying nesting material,
~~Brown~~
Green-eyes himself,
A young rabbit about the size of the towhee.

As Green-eyes "never" goes to this place and had left his own nest ~~at the same time~~ not two minutes before, he must have gone there out of curiosity, being attracted either by the rabbit or the towhee or both. As soon as he saw me, he recognized me as a potential food supply and forgot all about the other attractions, although he is usually standoffish. Neither of the thrashers does much singing and then it is usually an undersong and that mostly by Brown-eyes when digging. The ventriloqual quality of this song still deceives me. (The Junco with white patches on cheeks and throat is still here. It also has a small patch in the middle of its back). (The Wrentits are building, but it is

~~notyxbyxpxxxxikxxtaxxayxwhara~~

it not possible to tell where, as they range all over the place At about 2 o'clock I was sitting about 100 feet from the nest watching Brown-eyes digging and rolling stones and clods down the bank to the sidewalk. While she was primarily looking for food, there were certain clods which she seemed to push over the bank just for sport. Such clods were poised on the ~~bank~~ edge of the bank and she would watch them roll down without appearing to look under them for food. I moved about fifty feet further away and she followed shortly, disappearing behind a bush about ten feet away, From that point there sounded a thrasher song somewhat unlike those I have heretofore heard from either of these two birds, followed by "talking" of two birds. The two birds then appeared from behind the bush and proceeded in a liesurely fashion toward the nest. This looked as if Green-eyes had come to summon his mate--an unusual performance--so I went at once to the nest, expecting to find it empty; but there was a bird in it, well settled and composed. However, in a few seconds, Brown-eyes appeared and took over. The bird I saw her with before and the author of that sang was probably, therefore, a third thrasher making a social call. There was no fighting or squabbling, nor any signs of a chase and Green-eyes appeared alone at the oval lawn shortly after.

April 11 There is always one bird on the nest. Without making a careful check, I get the impression that Green-eyes was doing more than his share of incubating. I did not look to see if there was a fourth egg.

April 12 These birds are always doing the unexpected. At a little before eight A.M. there was no bird in sight except the one in the nest . At 8:30 it was the same. I sat on the low wall near the opening through the fence and began calling.

In a minute or so I could hear a slight rustling behind me, gradually approaching. Then a thrasher began to answer with the short "Blue-bird" call note and finally Brown-eyes came out of the sage and fern a few feet away and, when about two feet from my hand, paused, appeared to listen, then straightened up and gave a loud, full-throated call, the usual opening notes of thrasher song. She was immediately answered by a similar, but longer reply from the nest, whereupon she flew up over the fence and down into the bush containing the nest. This was an entirely new performance. There was some talking then and then both birds came up the bank and through the hole in the fence. My first thought was that there were three birds present. That Brown-eyes had heard the third bird at or near the nest and had gone to investigate and had taken over, so that the two birds now approaching me were Green-eyes and a stranger. I went quickly to the nest where I saw Brown-eyes just settling herself in it and no sign of any other bird. I then went back to see if there were two birds on the other side, but could not see any. I then went to the oval lawn and found Green-eyes there alone, ready to take worms if I tossed them to him, but very nervous as to what might be taking place in the trees and the air above. He would not come far from the shrubbery, but would dig about waiting for me to produce another worm, close to cover. I do not know whether there was a third bird present or not. These two are running the legs off of me as it is, especially now as their nest is outside the fence and to go from a point near the nest on the inside of the fence to the nest on the outside, I have to travel about a hundred feet to their eight or ten. Moreover they have both legs and wings and I am, at present, without the latter equipment; ~~although if there is~~

Hamby

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a deficiency which should be remedied in the course of time if the evolutionary principle of adaptive modification is still operative or, if one prefers that point of view, if the tenets of the Fundamentalists are sound.

At about 12:25 Brown-eyes was almost out of sight in a large hole which she was digging in the northbank of the glade. She paid little attention to me at first, but finally condescended to come for soft food and worms. After having several of the latter, she called once or twice and held the last worm in her bill. This meant that she would take it down to her mate in the nest , so I hurried there arriving as the change was being made. Three eggs. This seems to be a set for these birds.

2P.M. Brown-eyes, after first pretending that she did not want any worms, when I walked a few steps away, edged over toward me casting sheep's eyes up at me, turning over pieces of bark, looking curiously at a lizard that was doing setting up exercises, inspecting cracks in the wall, climbing up into a sage brush a couple of feet away poking at things aimlessly, finally decided that I was not going to do anything so to help out the commissary department, and that a good sun-fit was would be in order. This she proceeded to "do" about four feet away, first puffing out all of her feathers and loosening them up, and combing them out with her bill. Then having assured herself of the exact location of the sun by cocking one eye up at it and opening her bill wide, she introduced a new feature by spreading both of her wings out on the ground instead of raising one at a time vertically for the sun to shine under. All of this seemed to have the effect of concentrating her personal population at more accessible points where she proceeded to dislodge it with beak and claw,

to the accompaniment of resounding thwacks. As all of these agonies evidently failed to convince her audience of that food was necessary, she reassembled herself, turned her back on me and stalkedoff into the bushes. Meanwhile Green-eyes, down in the nest, continued to transmit British Thermal Units to the eggs while a hot sun shone on his back.

April 13 At a little before 8 o'clock Brown-eyes was at the oval lawn and for the first time, in response to call, came up into the upper court amongst the azaleas and rhododendrons to eat from my hand. A little later Green-eyes came for worms. There is always one bird on the nest and incubation started with the first egg as before. Late in the afternoon as Brown-eyes was approaching along a path, she saw a lizard sitting on a stone a little to one side of her route and paused for a moment to administer one good peck at him, then continued along the path without further concern about the lizard other than to watch him scamper into the bushes. These reptiles do not seem to be regarded as potential food supply, but as somewhat interesting phenomena calling for occasional notice. Brown-eyes, about ten feet away on the ground, rendered a very fine undersong with flicker variations. Imitation of the flicker was exceedingly deceptive, occuring with startling suddenness at unexpected intervals, sounding as if a hundred yards away. The effect is strange. The bird will be singing softly, bill closed, but throat pulsating, when suddenly the song seems to cease and, simultaneously the call of a flicker (in this case) is heard in the distance. The illusion is perfect as the singer seems to pause and

listen to the "other" bird.

April 14th. At about 7:20 Brown-eyes had a good meal of soft food and worms and ,when finished, took two worms down to Green-eyes at the nest, having first called to let him know that she was coming. I was next in the vicinity of the nest about 10 O'clock , Green-eyes being off duty. He refused to take food from my hand, but would take worms tossed to him at my feet. When ready to relieve his mate, he called and went to the nest without taking food with him, Brown-eyes appearing at once for food. The difference in the tameness of these two birds is very marked.

April 15th. This morning Brown-eyes came and looked me up where I was pruning in the garden , announcing her coming by her "bluebird" calls. At 1 P.M. she was on the oval lawn and had a good meal of soft food. When finished with this I held out to her the tin box of worms. She took three, taking one at a time and holding all in her bill at once--not an easy thing to do without dropping at least one of them --started for the nest about. While doing this she commenced giving her "approach signal" (the 'bluebird' call)--a sure sign that she intended taking them to Green-eyes on the nest 200 feet way. She then ran rapidly toward the nest, flying only when there were open spaces with to cross with no trees overhead. This is "standard" practise. When Green-eyes is off duty he does not wander around so openly, although I suspect that he may range farther. He certainly does his full share of incubating. Brown-eyes is more likely to take food to her mate than Green-eyes, although he does it occasionally. Brown-eyes is once more sleek and glossy without a misplaced feather and looks as if she were getting fat. While pecking about

in a casual sort of way by my side, after having had enough to eat and nothing urgent for the moment, she experimented with a new style of "feather dressing" which was new to me. She fluffed up her back feathers, folded her wings high up on her back so that the tips crossed slightly, then allowed her back feathers to fall over her wings, so that the wings were entirely concealed except for about a half an inch of the tips of about three feathers on each wing. This made her look like a wingless bird, the wing tips looking like tail coverts. This arrangement appeared to please her as she did not change it during the next few minutes while near me. The nest now is almost hidden by the yellow blossoms of the Kangaroo thorn and the surrounding "chaparral" is a mass of bloom. Belle of Portugal, and Cherokee roses, Fremontia, Leptospermum and Bush Lupine Wisteria .A warm sunny bank, soft ground in which to dig, fresh water for bathing and drinki ng, a table always set, enemies relentlessly repelled and plenty of friends about.

April 16th. This morning Brown-eyes had abandoned half of her new style of "feather dressing" and had one wing exposed, making her look curiously lop-sided and disreputable. She is very suspic ious of the intent of the robins, especially when they fly overhead, crouching low to the ground with her head on one side watching them. I offered her the open box of worms and she ate every worm, swishing out the bran with side sweeps of her bill and then digging up the ground where it had fallen to see if she had missed anything. She did not offer to take anything to her mate on the nest 200 feet away, but remained for some time in the vicinity of the oval lawn digging. While eating from the box held 3 or 4 inches from the ground, she laid two or three worms carefully on one side and it

looked as if she might be making a collection for Green-eyes. From past observations, I believe that this was her first intention, but, if so, it was abandoned. Usually the first symptom of such action consists in holding a worm in the bill and looking toward the nest; the second is to chirp and then start running for the nest. If no chirp is given the bird usually eats the worm itself, but if it chirps this seems to indicate the formation of a definite resolution to carry it to its mate. However, this is not an absolutely invariable procedure.

April 17th. Rain started about 9:50 A.M. Looks like a local shower as the sun is shining at many points about the Bay and there are clear patches in the sky. This is the ninth day of incubation for the first egg. The birds have given continuous attention to their duties and only one bird at a time ever is seen away from the nest. (10:01, sun coming out). Gave Brown-eyes "the run of the box" again. She ate all the worms she wanted, laying one on the ground beside her, during the process, then carrying it toward the nest. When half way there she changed her mind and ate it herself. I am inclined to the belief that she had just come off shift and that it was too soon to change. 10:10--Brown-eyes digging vigorously and singing to herself in a flower bed at the oval lawn. I look down at her from the patio ten feet above and forty feet away and call her. She will not come but gets quite excited about, running about, looking up at me and throwing small clods about, in the meantime practicing her undersong, a familiar strain of which has puzzled me the last two or three days. I now recognize it as the "kee, kee, kee-kee " of the Sparrow Hawk (Desert Sparrow Hawk-Cerchneis sparveria phalaena (?)) [illegible] the foregoing observation was made it was repeated with the same bird.

very much softened, but perfectly rendered as to pitch and rhythm. (Incidentally the Steller Jay's ~~perfect~~ imitation of the Red Tailed Hawk does not seem to disturb any birds at this place)- I have noted this many times. (10:45-raining again--alternate sun and shower). 10:48--hail. Julio, who is much interested in the garden, wanst to know if it will knock the caterpillars off of the trees.

April 18th. 10 A.M. Everything proceeding according to the usual routine. Green-eyes interested in worms but not in soft food. He relieved his mate at the nest, whereupon she came promptly for food. ~~In~~

April 19th. Green-eyes off duty at about 8 A.M. at the oval lawn. No further observations this day on account of absence.

April 20th. At 10:50 Brown-eyes was eating worms and soft food from my hand. She withdrew a few feet and sounded the first few notes of typical thrasher song, then went to the nest, Green-eyes coming through the hole in the fence and running off into the bushes in the glade. I looked for him without finding him; but in ten minutes Brown-eyes appeared in the glade, so I went down to the nest to see if it was occupie and it was. This was then a very short shift. Meanwhile a thrasher song sounded from near the top of the old oak. This was full song and on inducing the bird to come down it proved to be Brown-eyes. Both of these birds have now definitely ~~been sung~~ been observed in full song from a high perch near the nest, for they have each been kept in full view at least once continuously ~~times~~ while either coming from the perch where the son was sung to my hand, or vice versa. ~~In~~ If it be granted that these two birds are of opposite sex, then it may be stated tha both sexes sing full song. A few minutes after the foregoing observation was made it was repeated with the same bird.

Brown-eyes, this morning, is behaving as I have been told the male behaves and it may be that I have the sexes reversed. However, until I have more definite evidence that this is the case, these notes will continue the present designations. This is the 12th. completed day of incubation on this set of eggs, so that it will soon be known whether they are any good or not.

12:30 Brown-eyes on the nest. I moved the sprays of leaves and blossoms to one side so as to see her more plainly and then put my hand on her head, thinking that she might hop out of the nest and give me a chance to see if there are any results as yet. However she did not get out and made no protest. My position on the bank was so insecure that, if I slipped, there was risk of ruining the whole establishment, so I left further investigation until a more secure foothold is made in the bank.

April 21st. At 9 A.M. Brown-eyes sang loudly from the stump of a limb of the old oak. To make sure of the identification I went and stood about fifty feet away and twenty feet lower than her perch and suggested worms. After considering the matter she dove down off of the limbs and hesitated between coming to me for worms and taking over incubation. The worms won and when she had had enough she began calling and started for the regular path through the fence with a worm in her bill. However, I headed her off so that I could get to the nest first. This I succeeded in doing, finding Green-eyes on it. As I knew Brown-eyes would be there in a few seconds, so that there would be no danger of chilling the eggs if Green-eyes could not stand the strain of having me feel under him, I acted accordingly. Green-eyes vacated promptly though not in panic. Three eggs--13 days (not quite)--no young.

Brown-eyes, within the anticipated few seconds, appeared, calmly inspected the eggs and took over the job like an old hen. These birds are certainly faithful and conscientious incubators (or is it "ers"?). Incidentally while B.E. was singing from her high perch, her mate was responding from the nest with a similar song, but not so loud. Calling back and forth with low chirps when the shift is about to be made is now quite the regular thing, usually initiated by the bird that is off duty; but this is the first time I have heard the bird in the nest answer song with song. When I first heard it I thought it might possibly be indicative of a successful issue at the nest; however, such was not the case.

(The robins are building a nest in the crotch of a small oak about ten or twelve feet from the ground and about 8 feet from a window, where one can see it from the stairs with no obstructions of any kind in the way. It is nearly finished).

(I am sure there was no nest there on the 18th. as I examined the tree carefully for nests on that date as the tree was to be --and was--sprayed for caterpillars on the morning of that date. They have worked rapidly).(Also confirmed this morning, Spotted Towhee nest--four eggs--in a Penstemon about 3 feet above the ground--the first I have found that was not on the ground. I knew they were building in the vicinity--a usual one--but had looked only on the ground. Also California Towhee nest in the lower branches of a small pine, about three feet above the ground. They have built in this tree several times before. Did not look in the nest. The Junco and Quail nests in the court seem definitely abandoned).

Several times again this morning Brown-eyes has perched on high points in the open and sang. Maybe "she" is "he"; but if so, "he" is the only one of the pair that I have seen make unmistakeable egg-laying movements (twice), each time revealing an egg that

was not there, or rather, that had not been seen previously. It must be admitted, however, that Brown-eyes performances at the present time are those usually attributed to the male thrasher and that Green-eyes is delegating all public performances, for the present at least, to his mate. Brown-eyes seems unusually active this morning, when off duty appearing at first one place and then another, often at places where I have seldom seen her before and several hundred feet apart, digging, bathing, eating from my hand or perched on a high point sometimes singing and at other times apparently just looking at the scenery, which, from one of her vantage points, is limited only by the horizon (10 to 50 miles away) for perhaps an arc of half a circle.

( A fourth nest this morning--not yet identified--about five feet from the ground--supported by pink Cherokee and Belle of Portugal roses in bloom and by a small branch of a Monterey Pine). (Later proved to be a Cal. Thrasher)

3:10 P.M. Brown-eyes has had a long shift on the nest, I think several hours, for every time I have gone to the nest since about 11 this morning she has been on it. It seems to be almost the rule for these birds to face in opposite directions in the nest. About three o'clock I heard Green-eyes signalling that he was coming, so resolved to repeat the manoeuvre of this morning on change of shift, only with Brown-eyes in the nest. So I reached up to the nest (I can not see into it) and touched Brown-eyes on the back. Then on the head and, finally felt under her. She would not move although when I first put my hand on her she called gently, but this may have been in answer to Green-eyes who was at the time only a few feet away. She would not get off and as Green-eyes did not have the courage to carry out his intention of taking over as long as my hand

took her mate's place on the nest and he came down and inspected me in the same way. My shoes seemed to be the point of interest. He wanted to peck them, but did not. He also considered climbing on top of me to the box of worms but changed his mind about this too.

The thrashers are standing regular shifts now.

About 5 o'clock I was sitting on the ground doctoring the trunk of a peach tree that has gum disease, not having the thrashers in my thoughts, about 100 feet from the nest, when I heard a flutter of wings close to my back. Looking around, there was Brown-eyes on the ground looking expectant. I had not seen either of the birds for several hours, being busy about other matters. Brown-eyes perhaps missed her free rations and decided to look me up, although there is always food for these birds at the oval lawn feeding station--but not worms. I produced soft food and she scrambled unhesitatingly in among and on my collection of bottles, paints, poisons, scrapers, cans and what not to reach the food in my hand.

May 5th. About 10 A.M. I found a hairless green caterpillar, about an inch and a half long and nearly as thick as a lead pencil, eating new shoots on a rhododendron. I took him down and presented him to Brown-eyes who began at once to wrestle with him. It looked for a time as if she did not want to swallow him. Then she started to take him to the nest, but changed her mind and brought him back within a couple of feet of where I sat, faced me and beat the hapless creature on the ground so that the juice flew all about. She then straightened up and swallowed him in one gulp. After this one meal worm was enough for the time being, so she went to join a robin and a titmouse to see what the spotted towhee was making such a fuss about. The male towhee , who had a worm in his beak, was making all the noise, but the female was sitting calmly

was at the nest, I left them in peace. I had timed Brown-eyes' respiration (by watching her tail move) at 50 per minute just before I put my hand on her. ~~XXXXX~~ Immediately afterwards it was the same except for a few seconds, when it was faster. Her excitement did not, therefore, last long. This nest is so well surrounded by dense growth, that, in order to reach into it, I have to ~~xxxx~~ push my hand through it like a snake. It speaks well for the courage of these birds to stand their ground against such an apparition. Of course they have plenty of warning that something is approaching. ~~X~~ I could feel plenty of legs and feet and one egg under Brown-eyes, but did not like to make a more thorough examination as I did not know how long it might result in their being uncovered, as ~~xxxxxxxx~~ it looks as if Green-eyes might not come soon if I frightened his mate away. At 3:40, when I again visited the nest, Green-eyes was on it. Brown-eyes was on the bank near the nest and showed that she cherished no resentment against me by coming promptly, standing on my hand and eating. In two or three minutes she called and started for the nest. She had ten feet to go and I had a hundred. When I got there she ~~xx~~ was well settled, but did not resent my feeling around under her, without, however, my finding anything new. They are on the fourteenth day of incubation. If there are no young by tomorrow noon, my guess will be that these eggs are also duds. There was no sign of food being carried to the nest today. At the time of this last change both of the birds had reversed their positions in the nest.

(The robins are lining their nest with mud mixed with vegetable matter. A lump of this material is placed in the enst, then the bird raises her bill toward the sky, crosses her wings (to get them out of the way) then ~~pushes~~ puts her breast against

the inner wall and pushes hard with her feet for about ten seconds with a curious quivering movement. She then draws back for ten or twenty seconds, shifts through a horisontal angle of about 30 degrees and repeats the process , going all ~~ar~~ around the circumference several times, occasionally adding more mud from her bill or picking up small loose pieces from the rim of the nest . (Her breast is all muddy and this accounts for the muddy water in the bird bath in the court today) The action is a pressing one entirely, not a"smoothing" one. No doubt this presses the mud in amongst the fibres in the nest, cementing them together). (The Bush-tit nest in the oak near the east line of the place, which I thought to be deserted long ago, is occupied after all. The one which was started on a black acacia was abandoned almost as soon as started).

April22nd. At 9:15 A.M. Brown-eyes was digging in the open. She worked over to me gradually and began chirping. This meant that she was going to relieve her mate and,as we were near the openig in the fence, she would be able to beat me to it if I waited, so I did not stop to feed her and made for the nest first. It was almost a dead heat, but I won by a hair. Three eggs! The fourteenth day of incubation not quite completed.

At 11:50 still three eggs and no young. This ends 14 days.

April 23 rd. At about 7:30 Brown-eyes was on the nest, Green-eye nowhere in sight. He shortly appeared however on a bare branch in the old oak, where he sat preening for a time and then dove down to the nest. Brown-eyes came through the fence and ate a little soft food; but she had something else on her mind and did not stay with me long, climbing up to the perch occupied a few minutes before by her mate and sang a few snatches. She would not come down for food and shortly went up into the top of

a pine where she sat on the topmost spire and sang with ereryth wide open.

9:35A.M. at about 9:30 I stood inside the fence near the nest and began calling. Shortly I was answered from the nest. I wnet down to see who it was answering. Green-eyes. I talked to him and soon heard Brown-eyes approaching and talking. This seemed a god opportunity to feel in the nest, because if Gre en-eyes could not stand the strain of my feeling under him, Brown-eyes would appear at once and take over the job, so that the eggs would not be exposed for more than a few seconds. I acted accordingly. Green-eyes promptly departed. I felt something unusual and squirmy--a youngster! More feeling. What's this? Still three eggs! More feeling. Ah, I"see". Only ~~xx~~ two and a half eggs and a half of a youngster. He isn't out yet! If this is the first egg laid, then the incubation period ~~is~~"fifteen days". (This is why Brown-eyes opened up with full song this morning)? If all of the eggs do not hatch, the incubating period ~~xxxxxxxxxxxx~~ will work out as follows:

By this time B.E. was standing on my hand ~~and I could not tell~~

| | | | | | |
|---|---|---|---|---|---|
| Only one hatching .... .. | 15 | days | ~~plus or~~ possibly minus | 2 |
| Two " | 15 | " | " | " | 1 |
| Three " | 15 | " | exactly, provided | | |

the eggs hatch on successive days.

11:00 Brown-eyes on the nest. No signs of carrying anything to the nest.

11:10 Brown-eyes off and to the north of the glade running toward the old oak. As soon as she sees me she turns in my direction without hesitation and as I sit on the bank trots up calmly and looks me over between mouthfuls as I have on no coat or waistcoat and have my sleeves rolled up. She seems curious

about this sudden moulting of mine, but not at all nervous. I go down to the nest, thinking that, although she has just left it, perhaps being fed up with worms and soft food she may take some of it there; but she does not appear. On returning to the glade, I find her on the south side polishing her beak on a small log and after coming for some more food, all of which she swallows, utters a few loud calls and goes through the fence to the nest. By the time I get there she is all settled in it and I do not disturb her.

At 1:48 Brown-eyes was near the old nest. I gave her a good feed, letting her have the freedom of the worm box of which she took full advantage. She then stepped into the bushes, but, as she gave no call, I took it as a sign that she did not intend to go to the nest. To verify this I went to it myself and stood along side of it calling. No response at all. I stood there until 2 o'clock, picking seed vessels off of the Fremontia so that passers by in the street and on the sidewalk 3 feet from me would not suspect me of being half-witted, and then left. I had not gone 25 feet when Green-eyes in the nest, called loudly. I would like to think that he yearned for my return, however, naturally it was his mate that he wanted to come and relieve him, so I went back to see if the young bird had succeeded in getting all of the way out of the shell--and incidentally to make absolutely sure that, after nearly two months watching there really was a young bird there and that I was not the victim of a hallucination this morning. Sure enough, as Green-eyes stepped out, I felt two whole eggs and one whole bird before Brown-eyes stepped in disregarding me in her usual calm manner. Even the empty shell had disappeared. The miracle has happened! I am as proud as if I had laid the eggs myself! Anyway I am

sure that, in the last forty five or six days, whatever it is, I have developed more power and radiated more heat than all of the thrashers in California combined during the last 45 years.

April 24th. 11:15. At about 10:50 Brown-eyes was at the oval lawn and came running over across the road for soft food. She then ran down the road toward the nest, but changed her mind and went to dig in the berry-patch . I went over there and gave her all the worms she wanted, then left her and went to the nest, about 100 feet away, where Green-eyes was holding the fort. I whistled and called and after a minute or two B.E. answered with a loud call from the berry patch. I thought it was time to chang shifts and so did Green-eyes, as he added his entreaties to mine. It was now two to one and Brown-eyes decided to come down. When she was sitting on the edge of the nest I put my hand on it and Green-eyes promptly left; but Brown-eyes waited patiently until I satisfied myself that there were still two eggs and one bird. She immediately settled in the nest with great composure without offering to feed the young one. I understand that the feeding for the first few days is done by regurgitation. As yet I have seen no feeding at all of this nestling.

At 2 P.M. I gave Brown-eyes soft food and worms in the glade. She showed no disposition to go to the nest, so I went down to it a began calling. In a minute or two she answered and when she was sitting on the rim of the nest I thrust out my hand toward the nest, Green-eyes slipped out and I found there were still two eggs unhatched. I intended to take them both out and see if either was pipped, but when I had taken one, Brown-eyes slipped into the nest and I did not like to disturb her . There was no sign of the egg's hatching, so I pushed it underneath Brown-eyes again and she shifted her position a little in order

to cower at properly. It is rather surprising to me to find her so unafraid and patient under conditions which well might be irritating. She does not protest by voice or manner and seems to take my interference with her domestic affairs as a matter of ordinary routine. She did not feed the nestling while I was at the nest.

April 25th. At 9:15 A.M. Brown-eyes was in the glade moving about and giving her "Bluebird " call. She would not come to me for food, but soon went to the nest. I went there and found her in it. I returned to the glade and Brown-eyes came from the nest, chirping. I went back and there was no bird on the nest. Investigation also showed that that the young bird had disappeared and the other two eggs had not hatched. I could find no sign of the young one either in the branches or on the ground underneath. The nest appears to be intact. Green-eyes was nowhere to be seen and his mate showed no disposition to return to the nest. It looks as if this might be another failure as it has been 15 days since the last egg was laid. If the remaining eggs do not hatch, I shall open them in a day or two.

The rest of the forenoon the birds kept themselves out of sight, except for a short glimpse I had of one of them in the bushes near the tool house. I hunted for them several times but could neither hear nor see them anywhere. I went to all of their usual haunts and to many places where they seldom go, but no signs of them. A little after noon I sat inside of the fence, south of the glade and called at intervals. No answer for a long time and then there was a reply from the branches of one of the oaks nearby--a snatch of song. When I called again, it was repeated. This happened several times, then the branches began to move and Brown-

eyes came hopping down from limb to limb "talking" all the time. While eating from my hand she kept up a continuous flow of talk. At times she appeared to be asking questions, using a rising inflection. Finally she went back into the tree again and in a few minutes went down to the nest. I called at intervals and Green-eyes, who for the last few days has been disappearing immediately on finishing his turn at the nest, thus not getting any food from me directly, came out of the glade, ran to the hole in the fence and stood there looking and listening. When I showed him worms he abandoned whatever his original purpose was and came for food--not taking it from my hand, however, but from about two feet away. He then disappeared in the glade. At present this looks like the "bust up" of this particular effort. Their disappearance for several hours might mean that they are seeking a new nesting site. If so, their persistence is much to be admired.

At 1:50 both birds were in the glade, a bad sign, as, with the first nest this meant definite abandonment. Brown-eyes came for food with little warbles and questioning calls. During the incubation period she does not talk at all. If they associate me in their minds with their misfortunes there is no evidence of in their actions. During the short career of the young thrasher there was no sign of his being fed . I suppose he is "mostly egg" for the first day or so and needs no extraneous food supply(?).

At 4P.M. no birds in sight. I called them at the glade, but no answer. I went to the nest and both eggs were stone cold, no signs of being pipped. Back to the glade, both birds there digging vigorously. Green-eyes had a hole so big that he was almost out of sight. Brown-eyes came to me with a

different kind of talk than she has used before. She ate soft food and when I held the box of worms out to her, she threw out all of the bran with side sweeps of her bill back and forth, rapping the side of the box at the end of the stroke. After eating all the worms she picked up a twig about three feet away, considered it for a time and the dropped it. She picked up one or two more and dropped them. Both of them the birds went to the old nest location and looked up into the branches, but did not go up to it. I removed this nest some time ago. They then showed interest in the surrounding trees, walking under them and looking up into the branches and then one of them climbed up into it. I did not watch longer, because if these birds build a third nest here, they will undoubtedly show me where it is by picking up twigs near me and going directly to the new location as they have done on both former occasions. If they run true to form, they will not attempt to keep its location secret.

The incubating period of the first egg was not less than 13 days and not more than 15 days. Not having marked any of the eggs, no closer approximation can be made. Incidentally, it looks as if the birds themselves did not know how long it takes when they laid the first set, but that have learned from experience when to give up! I expect to find the two eggs in the present nest infertile when opened up.

At 5P.M. I went out to see if there was anything new. When I reached the glade Brown-eyes was sitting on a small stone preening. Green-eyes was out of sight, but I could hear him digging in the leaves not far away. These notes will show that, by feeding the birds, they are

often stimulated to perform some act differing from whatever they were doing before feeding . I now wanted to see whether the building urge was strong enough to make them begin a new nest if fed, or, at any rate show more marked signs of it than Brown-eyes exhibited an hour ago by picking up and dropping twigs. Brown-eyes was 25 feet away still preening . Crouched on the ground on the east side of the glade under a small oak; a place where I have never fed them before. Brown-eyes came running to me shortly, but before reaching me, stopped and picked up a long twig about four feet away and began to talk. She then looked up into the tree and began climbing up through the branches with the twig until she got up about nine feet which is near the top of this particular tree. and where the twiggy growth begins to thicken. She looked for a a place to put the twig and finally placed it in a crotch, practically over my head. in what I would call a structually poor place for a nest. She was then joined by Green-eyes and they talked it over, then dropped down to the ground near me and ran off. I do not believe a nesting site is selected in this casual way, therefore I do not think they will build there. The twig placed there in my presence was the only one and I believe it never would have been put in that tree if I had not called Brown-eyes over. The combination of twig, brushytree, me with the grub all coming at the ~~"psycological moment"~~ when the desire for nest building was strong, was too much for her so she immediately put "any" twig in "any" tree.

April 26 At 8 A.M. both birds were busy preening themselves after having had soaking baths somewhere; while friendly, they did not come to feed as their toilets needed immed-

iate and urgent attention, so I left them. At 9 A.M. Brown-eyes was wrestling with a twig in the tree at the poit where she deposited the twig yesterday, but I still doubt if this is the final location. Neither bird pays the slightest attention to me, except that Brown-eyes has several times responded to my whistling by bursting into song when she had previously been silent. Both birds are climbing about in the old oak and flitting from one tree to another and all together having a good, irresponsible time. Brown-eyes and a gold-finch delivered a joit concert from the top of the old oak--a somewhat mixed affair, as they sat about six feet apart and each performed according to its kind. Brown-eyes put on the loud pedal. Green-eyes was in a small tuft of branches out on the end of an otherwise bare branch of the same tree and seemed to be eating something on the leaves. Robins, purple finches, gold finches, humming birds, Gambel sparrows, wren-tits, spotted and California towhees were flying in and out of the old oak and the glade below, calling and singing during the few minutes I watched, making animated scene. Brown-eyes ended her part of the concert by darting off horizontally from her high perch, then banking her wings and flying vertically upward about ten feet where she seemed to catch some insect. She and her mate rustled about in the thick foliage of the glade where I could not see them and then all was quiet. I went to investigate and found Brown-eyes surrounded by a dense swarm of Argentine ants whose nest she was tearing to pieces , apparently eating larvae, although I could not tell. When they crawled up her legs she became quite fidgety, stamping her feet and showing distinct evidence of discomfort, finally decamping in a hurry. At 11:05 the birds were not in sight. After whistling and calling near the glade I was answered by snatches of full song

I had previously noted that she ...

from one of the trees, investigation showed Brown-eyes arranging a twig in the place whereI saw her put the first twig yesterday. It looks as if this might be the chosen site after all. Closer examination shows that it is a shelter of some kind of bird for a considerable time and it may be that the selection is not so casual after all. While arranging this last twig she sang loudly at intervals. It is a hard job to make the first twig or two stick where it should. (A quail's egg was found on the bare ground underneath a rhododendron by the dining room this morning).

At 12:20 Brown-eyes was sitting quietly in the new nest location doing absolutely nothing. When I walked underneath she merely craned her neck to see who it was, then resumed her pose of passive indifference. I had not called to her up to this time. I then called and showed her the worm box and she immediately came down, hopping from twig to twig, dropping alongside of me, making a plaintive mewing sound which she continued while eating. She then took three worms in her bill and laid them in a row on the ground with a side sweeping motion (the way bank tellers used to throw out coins in the good old days when coins were stacked up behind the counter in shallow trays). She gathered them up, looked about, called and trotted into the brush, evidently with the intention of taking them to her mate. There is nothing that remotely resembles a nest here as yet and it is by no means certain that they will build here , or elsewhere.

Just an hour later there were no birds to be seen in the glade. I sat on the south side and in two or three minutes both thrashers appeared, Brown-eyes coming to eat soft food with little whines. She went back into the brush and in a few minutes I found her sitting in the same prospective

nest location doing nothing. She came down shortly and went into the thicket of baccharis, mimulus and sage in the glade, from which soon sounded protests from quail followed by a loud rustling, whereupon out came a pair of quail followed by one of the thrashers apparently chasing them. If so, this is a new proceeding. I left the thrashers digging in the glade when the mild excitement had subsided.

4:00 The nest begins to look like a serious effort after all. Although Brown-eyes, when not otherwise occupied, spends a good deal of her time sitting there doing nothing, it is now possible to see the"beginnings"of the nest if one knows where to look. It is about ten feet above the ground in a small live oak which forms part of the eastern boundary of the glade and about 20 feet from ~~the first~~ nest No. 1 and [illegible] feet from ~~the~~ No. 2 second. The jays, hawks and owls which make the old oak an observation point will, I am afraid, have no difficulty in finding it, as they will be able to look right down into it. In this connection I am reminded of Mrs Wheelock's observation in her "Birds of California";"My observations go to prove that the destruction from various causes outside of human agency is greater among Thrashers than among almost any other wild birds." This book gives the incubation period of the California Thrasher as 14 days.

April 27 At 5:50 A.M. I went directly to the new nest site expecting Brown-eyes to be on the job and she was placing twigs in the nest. I talked to her and from about four feet over my head she burst out into full song. When she would stop I would talk to her again and she would repeat the performance. As Julio says:"A very fine bird."

Owing to absence, no observations were made until 5:15 P.M. At that time it was seen that considerable progress had been

made during the day on what is now nest No.3. There is now a well defined platform at the exact place selected with such casualness on the 25th. that I thought, at that time, it could not be possible for it to be a final choice. At 5:15 P.M. neither bird was in sight and all was quiet, but after calling a few times, I was answered with a short song, to be repeated with further calling, and both birds came rustling down from the trees, where I had not seen them. Brown-eyes ate soft food and worms, talking a little, and then went off in search of her mate, who had disappeared promptly, carrying one worm in her bill to be given to him, I suppose. (Went with Mr. Brock today on one of his trapping expeditions. Orioles and Grosbeaks abundant, in gorgeous plumage and full song. Saw a pair of wood-duck several times. They must be nesting there. Also two long-tailed chats, any number of yellow billed magpies, Great Blue Herons, Kildeer, Lazuli Buntings, Titmice, crows and buzzards, sparrow and red-tailed hawks, dozens of California Woodpeckers and several of their nests, flickers, mourning doves, siskins, gold-finches, meadow larks, warblers, king-birds, black Phoebe, towhees, wrens in one small area).

April 28 At 9:15 A.M. one thrasher, I could not tell which one, was sitting in the nest, or rather on the nest, as it is a mere skeleton platform through which the outlines of the occupant may be seen from below, doing absolutely nothing whatsoever as far as could be determined. This bird would not answer me and showed not the slightest interest in my presence. Perhaps it was waiting for its mate to bring material. This seems probable from the statement made to me by Julio before I visited the nest this morning, that the birds "are working very hard and one of them stays in the nest while the other brings branches." I am going to make the experiment of placing the soap-root lining of nest No. 1 where

where they can get it easily and see if they will use it. I will tear it to pieces first. 9:30--I will do it now. 9:46. It works. When I went out a bird was still on the nest sitting quietly, impervious to calls. I distributed the fibre partly on the ground under the tree where I sit and partly in the branches , noting that in the original nest the lower layers of the lining consisted of ribbons from the soap-root bulb before it had broken up into its constituent fibres. The bird in the nest, which proved to be Brown-eyes, climbed down and began gathering up soap-root ribbons--not those I had just put there, but others, carrying them up to the nest, which up to that moment contained nothing but twigs. I seem to have hit the psycological moment exactly. After two trips she came over to me and began gathering up the fragments of the old nest, selecting the ribbons, and carried them up to the nest. She was perfectly friendly, but entirely without interest in my offerings of food, chirping to me , but too much absorbed in work. Green-eyes soon appeared in the glade, alternately picking up ribbons and dropping them to dig for food. He did not take any to the nest during the 15 or 16 minutes I was ther 9:57--raining. ( I shall now prepeare a feeding station for Bullock Orioles. Mr. Brock is "breaking in"some wild ones which he caught yesterday, and will liberate them at my place in order to determine whether they may be induced to nest here. Orioles come here, but, so far, have not nested here. Mr. Brock, who suggested the experiment, thinks the conditions here justify the attempt).(While my own observations are limited, in past years, I have been accustomed to think of these birds as nesting in the valleys and sheltered canyons rather than on top of a projecting spur.) I planted a weeping willow for the especial benefit of orioles a couple of years ago, but it was

in poor shape when planted and never amounted to anything).

At 10:55 Brown-eyes was up in the nest, working on it. A lot of progress has been made in the last hour. She came down quickly for food and, when finished, gathered up a good sheaf of fibre from the old nest and carried it up to the new one. They have used up a large part of this already. I noticed this time that the piece of rope fibre which I tricked Green-eyes into using in the original nest was rejected just now by Brown-eyes who selected soap-root from the same pile by preference. It has a faint, tarry odor and this may be objectionable. So far, since Green-eyes, as it now seems, gave his approval to the selection of site, I have not myself seen him actually work on this nest, although he has fumbled around with material on the ground. However, I was away most of yesterday.

12:20. Brown-eyes was on the oval lawn as I passed through the court above the lily pool, about 50 feet away and ten feet higher. For some reason I have never been able to get her to come up to this place by calling, although she occasionally comes to bathe in the bird-bath here. To get here she has to cross quite a bit of open space, then through ferns, azaleas, rhododendrons, etc., unless she flies. However, I tried again, crouching on the ground behind a Breath-of-Heaven, where she could not see me, except from the lawn, and First she ran about the lawn quite excited, then across the road, through the shrubbery, around the rocks at the pool, until she reached a path leading to where I crouched, ate all of my worms, picked up an almost invisible filament of something and trotted off down the pathway toward the nest ~~150~~ about 150 feet away.

At 12:20 Green-eyes, in the glade, was quite willing to consider the matter of food, but having assured himself that I had no worms in my hand, his partner having eaten them all a few minutes

before, did not see why he should run the risk of having me grab him when the utmost he could expect to get out of me was soft-food and he could get all of that he wanted from the feeding station. However, if he went around behing me where the ground was higher, it might be that things would be different there, anyway he could have a better look. No use.So off he ran to the berry patch.

At 5:45 everything was quiet in the glade . One bird was sitting quietly in the nest,but by request, came down to eat, first singing a little, then after eating, retiring to a sage bush six feet away and singing some more. A compromise between under-song and full voice. This was Brown-eyes.

April 29 At 7:15 A.M. neither bird was on the nest, both were across the road in the north eastern cornern hunting for food. Brown-eyes came on call but Green-eyes continued his own affairs and then went up to the nest, followed by Brown-eyes. The sky can be seen through the nest, although they have used up practically all of nest NO.1, as far as I can see.

At 9:15 one bird was in the nest. I called and it proved to be BrOwn-eyes. She came hopping down from twig to twig and held out to I showed her the box of worms at a height of about 5 feet, near a limb. For the first time she ate while sitting on a limb without coming down to the ground. She picked the worms out one at a time without sweeping the bran aside, heretofore when I have given her the box to eat out of she has swept all of the bran out. Why did she not do it while sitting in the tree this time? During this performance Green-eyes was carrying lining to the nest. I went down to Nest No. 2 and took out both eggs. although I had not noticed The nest was full of Argentine ants. One egg was pipped and on chick opening it I found a fully developed young one covered with ants. infertile The second egg was sterile. The ants may have been the cause of the death of the

young bird that disappeared, although this is the first sign of ants which I have seen in the nest. They may also have caused the nest to be abandoned by attacking the pipped egg. (Who knows but that the attack by Brown-eyes on the ant nest recorded in these notes--the only one witnessed--may not have been inspired by the attack of the ants on the nest?) I shall put a band of "Tree Tanglefoot" around the trunk of this tree and also around the trunks of any other trees having branches interlacing with those of this tree.

The birds worked very leisurely during the afternoon. Brown-eyes has shown more anxiety as to the whereabouts of her mate during the last day or two, than usual. Several times she has stood near me and peered in all directions, evidently looking for him, at the same time calling.

April 30th. At 6:30 neither bird was working at the nest. They were across the road at my berry-patch where they seem to find the digging very good. A little before ten O'clock They were both there and by offering them food I soon had them digging close to me. They dug mostly about the roots of the bushes. Brown-eyes unearthed a very large cut-worm and after breaking it up ate a portion, than ran over to Green-eyes and gave him the remainder. They kept up an almost continuous conversation with each other, mostly low gurgles, short snatches of under-song and a low, gutteral rasping sound, "blue-bird chirps" and, occasionally a drawn out "h-a-a-a-h" (like the word "hair", but without the "r"). Also a soft, high-pitched trill. I have not seen them visit the nest this morning. (Now 10:15)

4:55 I still have not seen them visit the nest today. They have been having a good vacation, poking around in corners where they do not usually go, examining cracks in the steps, going into the lath house (where I have never seen them before)

singing from the top of the tallest pine and in the old oak. Today they are inseparable.and carefree.

(A nest in one of the hedges discovered a few days ago and not examined turned out to be the first Linnet's nest found here, although it is almost our most common bird. This is the seventeenth kind of bird whose nest has actually been found here. (Inside of my ~~fence~~ property line)

Nests actually found here this year to date:

1 Plain Titmouse
2 Bush Tit
3 Spotted Towhee
4 California "
5 Western Robin
6 Vigor's Wren
7 Junco
9 Quail
10 Thrasher
11 Song Sparrow
12 Linnet
13 [illegible]

Seen to gather nesting material:
1 Allen Hummingbird
2 Anna "
3 Wren Tit
4 Purple Finch

May 1st.

At 7:30 A.M. no signs of either Thrasher in the glade or atthe nest. They were soon found digging industriously in the berry-patch which was irrigated yesterday. Brown-eyes came promptly for food. Green-eyes remained on the edge of the patch digging phlegmatically--not interested in Brown-eyes' activities at all and not even looking at me, aside from the first casual glance. Brown-eyes was given two or three worms and them some soft food. While eating the latter from my right hand, she noticed the open worm box in my left, climbed over the larger tin box containing the soft food and reached up for worms eating After three she selected four more and carried them over to Green-eyes 20 feet away and held them in front of him. He condescended to stop digging long enough to take the worms from

her one at a time, and then resumed digging. Brown-eyes came over, ate three worms and then took one to her mate. She came back again for more. I held the worm box almost concealed in my hand so that she had to reach down between my fingers to get them. After eating three she picked out five, which she had some difficulty in holding securely, it being necessary to arrange them on the ground properly in parallel lines, then took them all to Green-eyes. The latter, during all of this time would not put himself out in the slightest to earn these worms. He would not even turn around to face in the right direction or interest himself in anything but digging with machine-like regularity--not even take one step towards his mate or even look to see whether she was coming. After this Brown-eyes came for a good hearty meal of soft food, talking a little, and then joined her mate in an assault upon the cut-worms and other pests at the base of the currant bushes. With Green-eyes so indifferent even towards his mate's efforts to keep him from starving, it is rather hard to account for his ever coming to me to eat.

(The robins have several eggs and spend a lot of time on the nest, but do not occupy it continuously as the thrashers do after the first egg is laid. About seven a male quail looking for a nesting place on the flat roof over the one-story part of the house went into a small house which I had formerly kept among the shrubs, hoping that quail might nest in it. A year ago, July, noticing a pigeon making frequent visits here, moved the box to its present location, hoping the pigeon would occupy it, but without success. I have seen quails rear broods of young in second-story window boxes in which flowers were grown. Such nests have always given

rise to fantastic yarns as to how the parents get the young down to the ground).

A heavy rain with strong south-east wind commenced early in the forenoon. At 1 P.M. it was still raining. It stopped between four and five. About five I went out to see how the thrashers were faring, Julio having reported about an hour before that they were not in sight. There was a fluttering in one of the oaks of the glade and Green-eyes dropped to the ground and worked toward me. He was very wet and disconsolate looking. In a few moments Brown-eyes came, dry, all but her tail which again looked like that of an archeopteryx. She was very hungry but had to eat soft food, as I had no worms with me. Green-eyes hovering around on the outskirts, wringing the water out of his feathers, got nothing. I think he expected his mate to repeat her morning's activities. My guess is that Brown-eyes occupied the nest most of the time and remained relatively dry, whereas Green-eyes probably foraged about, as even his head and breast were wet. As soon as Brown-eyes had enough she flew up into a tree and sang, then climbed into the nest and again sang full voice, keeping this up at intervals for several minutes. About ten minutes afterward a thrasher sang loudly from the top of the old oak. I went out to see which one it was as I wish to get further confirmation of Green-eyes' full song. I waited until the bird dove out of the tree, marked the spot where it landed and hurried there. At the point marked was Green-eyes and about thirty feet away was Brown-eyes digging in the open. I am reasonably certain that it was Green-eyes singing--although not positive as he was not in sight during the whole of the dive. From observation of these birds in the nest at arm's length and of the robins today at about ten feet, I believe, that as long as there is a

bird on the nest, the eggs are dry and warm. The robin looked especially comfortable during the heaviest down-fall today and the nest is not particularly well protected against rain.

The Thrasher nest No.3 is well protected from heavy winds . So far I have seen it only from the ground below. It will be difficult to observe what happens in it. None of the branches can support the weight of a man and a ladder will be difficult to place without causing great disturbance of the nest. After two failures I hesitate to risk unduly alarming the birds.

May 2nd Neither bird on the nest at 7:00 A.M.Both north of the entrance driveway. Brown-eyes ate soft food and meal worms, carrying as many of the latter to her mate as she ate herself.

At 11:30 Brown-eyes came and looked me up north of the road, having just had a soaking bath somewhere, and looked like an old pine cone. She was very anxious to have some food and it seemed a good time, especially as she was very active and friendly, to see if I could get her to fly up off of the ground and eat out of my hand while sitting there. She took several worms on the fly when I offerd them to her about 3 feet from the ground and when I held the worm box at about the same height she flew up and sat on my hand while eating. This is the first time she has flown to my hand, although she frequently stands on it when it is placed on the ground. Finally she took one worm down to the nest. During a part of this period she was preening and digging (about half the time within arm's reach) and the power and rapidity of her movements are surprising. She uncovered an empty seed vessel of the Pittosporum tobira and shook it so rapidly that the vibration of her head and bill made a buzzing sound.of the order of pitch of that produced by a humming bird's wings. This seems incredible.

At 2:45 Green-eyes was sitting in the nest exchanging low calls with his mate ,who repeated her performance of flying to my hand.

Her "converstaion" this time consisted mostly of: "Pit-yourki-pit-yourki". Sometimes it is:"Beevoor, beevoor, repeat-repeat." at others:"Wheeoo-wheat" and "Whit-you-whit-you". Of course it is impossible to represent these sounds at all accurately. There are many other conversational sounds made that cannot even be approximated in writing. I do not know of any other native bird that has the variety of "small talk" of these thrashers. This talk is also sometimes mixed with imitations of the California Jay, the Flicker, the Robin and the Sparrow Hawk. By"talk" I do not mean either the undersong or the full song. It is very low and I usually hear it when they are playing about me or taking food from me. Some of it is undoubtedly intended for me and some for each other, when together. Their loud calls are different again and usually consist of the opening phrase or two of full song. The undersong is a miniature full song, sung with beak closed, but even it does not contain all of the variety and richness of full song. The latter,when heard, say ten feet away, contains an astonishing variety of sounds which are absolutely missing ~~when~~ from the song as heard at a moderate distance, say 100 feet. These give the nearby song an entirely different character, much richer and more embellished than the distant song, which is fragmentary in comparison.

May 3rd. At 7:20 Brown-eyes was on the nest, Green-eyes in the north-east corner digging. This is evidently the preliminary "thinking" period at the nest. Green-eyes ate worms, but he is ~~still~~ shy again and needs a lot of coaxing. He did not take them from my hand so I tossed them to him 2 or 3 feet away. The difference of eye color is very pronounced.

At 9:20 I was thinning out the peaches in the"orchard" when I ~~he~~ heard a thrasher call in the vicinity of the nest. I assumed that Brown-eyes was off duty and that,if she knew where I was,

* such as mewing, whining, "bubbling", trilling and warbling

she would come; so I whistled and called and she soon appeared under a blooming Ceanothus where she appeared to be much interested in the bees humming over her head, looking up curiously. I held my hand so that she would have to stand on tip-toes to get the worm. It is curious how these birds can elongate themselves. Stretching for a worm her appearance is entirely altered from normal. She becomes longer, taller and much thinner about the difference that there is between a duck and a game-cock. Finally I held my hand so high above the ground that she had to fly up to get the worms. Cherries are ripening (about 10 days later than usual) and it remains to be seen whether the thrashers will join the other birds in taking toll of the crop. (Toll is really an understatement, as the owner of the tree gets the toll and the birds the crop).

(Since I put out sunflower seed and Manchurian hemp I see more linnets at one time than I usually see in days). (The young purple finches are out of the nest begging for food. The adults were nesting weeks ago, but I have not looked for the nest)

A little after 1P.M. I went to the glade. Green-eyes in the nest, Brown-eyes on the ground. I offered the latter raisins, but she would only turn them over with her bill and not eat them I stretched out on the ground and she played about me for several minutes, even trying an exploratory peck or two to see if she could dig under me. I put the box of worms on my hip and she started to climb up on me, but slipped on the tin box of soft food and gave it up. She then inspected me from all sides much as she does an animal that has been killed. The day being very warm, she is holding her feathers very close to her body and looks very small and slender. After examining into the actions of a pair of Wren-tits in a small oak, she

in the nest in the penstemon.

(Before this disturbance subsided an outcry arose from the robin's nest mingled with blue-jay screams and the robin in the towhee's audience flew to join battle with the jays. The latter soon retreated, leaving both robins sitting on the roof gradually calming down. Julio says that there were 5 eggs in the robin's nest yesterday. I can see only three, but he hangs out of the window further than I care to).

(Goldfinches) I finished and put up yesterday three feeding stations for goldfinches, having had none before. These contain a special mixture of small seeds recommended by Mr. Brock.(The linnets already appreciate my efforts). One small station I placed near a peach tree on which I was thinning the fruit yesterday and this morning. This is near a bank on which grow Ceanothus and other shrubs, in one of which the gold-finches nested last year, but had already abandoned the nest before it was found. I thought this station might induce them to build nearby. While I was watching the station for goldfinches about noon, one appeared and sang almost continuously for about ten minutes on another peach tree, then flew up into the one on which I had just been working, revealing the location of a nest which had just been started, probably yesterday).(This is the thirteenth kind of nest here this year that has actually been found. There are probably 15 here, counting the purple finches and the wren-tits.)

(4 P.M. Julio just found a dead female quail with an egg by her side and 20 feet away, a quail nest lined with feathers that had just been destroyed .The quail was plump, with a full crop and no marks of violence. It could have been dead but a few hours).

( Shortly after the junco nest was destroyed--a day or two

after--I found a dead junco in the garden. For several days thereafter but one junco was seen to visit their accustomed feeding station, then it disappeared. There has always been at least one pair resident here at all times--I have thought only one, as each year I find three successive nests built by the same pair. Since the destruction of the nest this year I have seen no further evidences of nest building and it looks as if there had been but one pair in residence). (Song Sparrows) The morning after the heavy rain of May first the song sparrow nest was empty except for three wet and cold eggs. Since then the birds have not been seen to visit the nest).

May 5th At 7:30 Green-eyes was on the nest, Brown-eyes investigating things in the orchard. Amongst other things she noticed the ripening cherries. I do not know whether this means she intends to eat them or not. She came readily enough to hand, but, after examining the soft food in which I had put a raisin or two, she would not touch it, but hung around me like a little boy around a kitchen table on which there are pies fresh from the oven. When I showed her the box of worms life took on new interest.

The nest looks appreciably smaller than either of the others. It is elliptical in plan and nout circular.

May 6th Away most of the day--so no observations other than a couple of feeding operations and noting that the nest was occupied. Two or three days ago I substituted soft food for the mixture of suet and scratch feed at the thrashers' feeding table and Brown-eyes gradually became more and more eluctant to take soft food only from my hand, finally, on seeing that I had nothing but that kind in my hand, she would refuse to eat it insisting upon worms. ~~It seemed to me~~ I thought that, if I should

restore the suet mixture to the table and then have soft food available only on personal application to myself; she might recover her apparent loss ofappetite, for she is very fond of it. Consequently I made the experiment. On returning shortly before 6 P.M. I found her off duty, Green-eyes being in the nest, and the soft food complex overcome.

May 7th. Last night was a night of hard rain. About 8 this morning, Green-eyes in the nest and his mate off duty and invisible. In response to my calling, the first few notes of thrasher full song sounded from the direction of the berry-patch and Brown-eyes, quite talkative, and with a very wet tail, but otherwise dry, came trotting out into the road where I stood, and had a hearty meal of soft food. I rewarded her return to normalcy by giving her all the meal worms that she was willing to jump for and between worms she rolled small stones and clods down the bank and sang various short extracts from her repertoire. Her small talk this morning was based on the "Whit-you" motive with a few sylables preceding and following. At about 10 the Sampson brothers arrived to get some pictures. Brown-eyes appeared at the oval lawn and Mr. Walter Sampson set up his movie camera in a convenient distance. Brown-eyes came for worms and my job became one of keeping her contented and near me while Mr. Sampson was getting his adjustments made, without giving her enough food to cause her to leave. She was very patient, hanging about me digging and waiting for grub, but by the time everything was ready a hard shower came up, Brown-eyes went back to the nest and the operation had to be deferred until the skies cleared and Brown-eyes was off duty again. When this happened an hour or so later, we found her at the south

side of the glade. I kept her near me as before until Mr. Sampson could get his outfit set up and adjusted about 15 feet away, by estimate, and I then gave her both worms and soft food from my hand while Mr. Sampson took about 23 feet of film. Afterwards we measured the distance and found it about 17 feet. In the haste to get everything coordinated and synchronized it was not possible to measure the distance in advance. Brown-eyes' performance was a fair one, although she was not entirely at ease, so retreated a number of times and spent almost no time loafing and digging in my vicinity. (Found the Wren-tits nest in an acacia armata (Kangaroo thorn) about 2 ft. above the ground and the same distance from the side-walk in the chaparral patch. This is a small bush andI have searched it several times, as I thought, thoroughly. For a week or so the birds have scolded me whenever I went near this place. Today I resolved to have a last good look through it. I crawled under it, pulled aside branches, looked though it towards the sky. Meanwhile one of the tits was scolding me not more than 2 or 3 feet away in the same bush. This bush is very dense and covered with sharp thorns which pierce clothing readily. At last I saw what looked like a tail; attach to this there was something looking like a bird and about the bird was a fuzzy patch. All of this proved to be a Wren-tit in its nest, about 2 feet from my face. The bird did not stir, and as far as I can see from several subsequent visits, is permanently attached to the nest. I think they have young, as they carry suet away from the thrasher table at the oval lawn a couple of hundred feet away)

May 8th. (Wren-tit and nest still inseparable. The Gold-finch nesting in the peach treeeis the Green-back. I was not certain until yesterday, especially as a Lawrence Gold-finch sat for

a few minutes on the same twig as the female Green-back, about 20 feet from the nest and it seemed for a time that the nest might be that of a Lawrence. However, the female objected to the presence of the Lawrence, driving it away, and later I saw the male Green-back join the female in working on the nest. He also sat & preened about ten feet from me for fully five minutes, so he was easy to identify. These birds are now using the cotton batting which I have put out for them).

( Add to birds at 40 Selborne Drive the Turkey Buzzard and the Western King-bird. The former seen on the 6th. and the latter this morning)

8:30 A.M. One thrasher on the nest, the other not to be seen.

9:15 Looking out the window as I am writing, I note one of them gobbling "pudding" at the thrasher table. The quail are eating from their table outside the window 8 feet from this machine. They can see and hear everything that takes place in this room, as the window is large and goes clear down to the floor. The top of their table is about level with this floor. If they fly suddenly--as they just did when a door slammed--they blow a shower of wheat and corn against the window panes. As I punched the period for the last sentence, they were back again on the table, looking at me suspiciously, but eating nevertheless.

9:30 Brown-eyes, out near the berry-patch, came quickly for soft food. Evidently this item of diet, no longer being available at the table, is very acceptable from the hand. I held the box of worms just out of her reach and, after stretching to her utmost to get at the contents, she surrendered to the inevitable, jumped up on my hand and ate every last worm. She was too nervous yesterday, with Mr. Walter Sampson and his camera on a tripod 17 feet away, to take this liberty.(That is the camera was on the tr. )

(A strange May thus far, fitting accompaniment to the coldest winter ever recorded in this part of California by a very wide margin and these records go back for 62(?) years. (Get the facts from the weather bureau). Heavy rains May first and rain at frequent intervals sincethen and another shower now! This in a season when the total precipitation to date is about one third less than normal, or, in other words, the normal is 50% more than we have had so far this year. May seems to be making up for it. In January, February and March this year we have had warmer days than any day in May of this year, so far)

(Saw the Wren-tits eating the raspberries today).

May 9th (Found the Nuttall (or Gambel) Sparrow's nest this morning at 7:00. No eggs. It was located through the assistance of the male bird who sat on the next bush and sang.

At this time the goldfinches were carrying cotton to the nest, and it was seen that the Wren-tits have young.)

One thrasher on the nest. (Another California Towhee nest found by Julio in an oak overhanging the roof of the shop. This is 15 or 20 feet above the ground and it looks as if the birds took the roof level as their datum to work from).

Too busy all day to observe the thrashers often.

May 10 At 8 A.M. Green-eyes was calling:"Scrip, scrip " somewhere. (Incidentally I have not yet, as far as I know, heard his mate use this call) I called him and Brown-eyes in the nest answered:" To-wheet-you-true-true-true", rolling her r's. Green-eyes did not answer, stopped calling and did not go to the nest, but appeared a hundred feet away in a direction opposite to that from which I first heard him. He worked his way over toward me gradually and took worms tossed to him a few feet away, but would not come to hand, nor go to the nest. I think, therefore, that Brown-eyes' call was not for him to come and relieve her,

but an answer to me, especially as she showed no anxiety as to whether her mate was coming, as she did not repeat the call.

6:00 P.M. For the last two days I have seen Brown-eyes away from the nest but a few times. It is true that, during this period, my observations have been fewer in number than usual; however, I have seen Green-eyes frequently and have a distinct impression that Brown-eyes is doing most of the work at present.

(About noon Mr. Brock brought up two pairs of Bullock Orioles which he caught recently and broke in to eat prepared foods. We put them in the cage I have been making around the out-door feeding station and they seem very happy and contented, going to feed and bathe almost at once, making no outcries and doing no wild fluttering nor seeking means of escape. One of the males has sung once or twice. The cage is about 3 feet high and a little over 2 feet square. It has the entire top on hinges arranged so that it may be opened from a distance by pulling a cord. In a few days, when we think they have become accustomed to the surroundings and well acquainted with the location and use of the feeding station, they will be freed. During the afternoon the cage was visited by wrens, wren-tits, linnets and humming birds, the latter being especially curious about the phenomenon. At present the orioles have a supply of apple, banana and soft food, all of which they eat freely).

May 11 At 6:30 A.M. Green-eyes was in the court directly below my bath room window. I have not seen him in this territory before. He was picking up numerous very small objects from the surface, which I could not see.

At 7:30 there was one bird in the nest; the other I

did not see. (Two Green-backed Goldfinches were gathering nesting material in the berry-patch . They did not seem to be the pair that is nesting in the peach tree as the material taken corresponds to that used in an earlier stage of nest building)

About 9:30 a loud thrasher song sounded from the direction of the glade, so I went down to investigate the singer. On my way down it was repeated and I located the singer in a tree near the nest. It sailed over my head,looking as big as a magpie,down into the chaparral, where the song was repeated. Meanwhile I stepped aside to assure myself that there was a bird in the nest as I suspected that the singer was Green-eyes, who is much the less vocal of the pair, and wanted to make sure of it . There was a bird in the nest. The singer in the chaparral began to call "Scrip, scrip, scrip-scrip" and only Green-eyes has been definitely placed as the author of that call. The sound began to recede in the direction of the oval lawn, so I went there and Green-eyes was just arriving--for it was he--as I proved by inducing him to come across the lawn and the road to me for worms so that I could check up on the color of his eyes, although from the position of his wing tips, I was already sure that it was he. It <u>was</u> Green-eyes. Therefore, once again, both of these birds positively sing the full, loud song. After my local supply of worms was exhausted, Green-eyes pecked about on the lawn keeping one eye on me for further possibilities in the way of food, but he would not take soft food. He did, however, dig in the lawn in violation of rules and agreements and got and ate some angle-worms. However, his digging was very restrained and he did not scatter earth and roots about. About 3:45 he was singing again, as I proved by getting him to come for worms. This is

one of his "conspicuous" days when he is at the same time, bolder than usual. He had not eaten from hand for so long and had kept out of sight so much that I had begun to wonder if he had relapsed to his former wildness. He showed no hesitation in taking worms tossed for him and, after about the usual amount of coaxing, took them from my hand. I then turned my attention to the Wren-Tits who scold me now whether I am near their nest or not--even when I go near the cherry tree when they are robbing it. They frequently come as close as three feet or less from me when I am near the rose-covered fence and scold. I tried offering one a worm, which he looked at and was interested in, but would not take. While I was talking to him I became aware of a shadow at my elbow and there was Brown-eyes who had heard the talk and had come to investigate. She wanted, and got, the worm and then jumped up into my hand, scraped away the bran by raking her bill across my palm with none too gentle strokes and ate the worms as fast as they were uncovered.

I have not looked into the nest at all, so do not know what is in it; but one bird is in it all the time. Earlier in the day Brown-eyes took three worms up to it, but her mate did not take them from her. She took a long time in settling in the nest-perhaps half a minute--and seemed, from the movements of her rear end and tail, which was all I could see from below, to be poking around with her bill.

May 12th At 7;30 A.M. Green-eyes was calling his "Scrip" call from the shrubbery across the street about 150 feet from the glade where I stood. I whistled and called and he answered with his full, rich song, somewhat to my surprise. He was answered by Brown-eyes in the nest in similar fashion.

I continued to call and Green-eyes came running and flying toward me and sang while on the ground. Brown-eyes called and flew from the nest. Green-eyes, who was edging up to me for worms solved my dilemma (for I had no worms) by going up to the nest immediately. A third thrasher then appeared calling "Scrip" also and went into the glade. As I moved away I noted a Cooper or Sharp-shinned hawk sitting in the top of the old oak looking down into the glade. As I turned back he stooped into the glade. I rushed in to chase him out, as he appeared to be headed for the nest, but I could not find him. A few minutes afterwards a hawk was seen gliding about in circles overhead, which, from its square cornered tail, I assumed to be a Sharp-shinned. Inspection of the nest showed Green-eyes shifting himself into a more comfortable position. Presumably he had adopted some defensive attitude a few moments before and was now settling at ease. A last glance up into the tree showed an Anna Hummingbird sitting in the place vacated by the hawk.

(The Lawrence goldfinches are here at present and I am making a small feeding station for them, having two compartments, one for a special seed given me by Mr. Brock, believed to be very attractive to them, and the other for Mr. Brock's goldfinch mixture.

1:45 As I left the dining room I saw Green-eyes hop up on a bench about 50 yards away at the end of a path. I whistled and called to him and he immediately broke into full song and seemed much excited. He did not come to me but disappeared in the direction of the nest. He is becoming more vocal now than his mate, the reverse of the usual condition.

(But a few days ago these notes record that our common linnet (House finch) was one of the most uncommon birds here. I decided to make it more attractive to them so followed

Mr. Brock's recommendations as to food supply. Now they swarm at every feeding station I have, no matter whether it contains food for them or not--also in the cherry tree--where they, the purple finches and the wren-tits are eating the cherries faster than they are ripening. It is odd that, although the purple finches are here all the time, rearing their broods here, they had not patronized the feeding stations often until the linnets led the way. Now they and the linnets fight for possession of them constantly. The purple finches are even bringing their young to them and the youngsters are now cracking seeds like veterans. A one legged male linnet sits in the seed trough of one station for many minutes at a time, repelling all comers, being most successful against the purple finches).

May 13 Away all day. No observations until about 7:15 P.M. at which time the birds changed shift, I think, but it was a little too dark under the trees to be sure. At any rate, one bird went into the glade and another came out. Both were rather independent, although Brown-eyes came and ate worms. This is the latest that I have attempted to attract either bird to me. All of the other birds, except a straggler or two at the feeding stations, have gone to roost.

May 14 th. Nest occupied all the morning, the birds taking turns. At about 1:00 P.M. I was having luncheon in what the architects glorified as the cloister, but which the electrician, in labelling the various circuits in the house, considers the "collister". See Illus. p 350A This is a passage way between the dining room and the shop along the north side of the court, entirely open to the south except for columns carrying the upper story of the house. Brown-eyes appeared at a "pudding" feeding station in a small oak about 30 feet away and, in

response to invation, dropped to the ground with a piece of suet in her bill and trotted toward me. When she reached the small gold-fish and lily pool near me she perched on a small rock on its margin and showed much interest in the fish, turning her head from side to side in order to follow their movements the better. She then came into the cloister where I sat at the table and jumped up on to my hand which I held at about the level of the seat of the chair. When she had had enough to eat she flew off, giving a decided push with her feet on the take-off.

(At 8P.M. Julio brought in to the living room two fledgling Plain Titmice, too young to fly. They had fallen out of their nest in the bird house in the court, where he heard them calling on the ground. When brought into the light they begged vociferously for food and showed no fear. They were too young to be able to swallow food without assistance. We got a ladder and a flash light and I climbed up to the nest, turning the light into the entrance hole to see what might have happened. One of the parents was in the nest and at once assumed a belligerent attitude, fluffing up her feathers, hissing like a cat and striking at the opening, but not offering to come out. I put the young birds inside and all quieted down . In the morning there were four young in the nest, this being the full number of this particular brood. This nesting box is the one previously referred to as the oldest inhabited house in this section of Piedmont, man or bird, and is the one made for the wrens to sleep in during the winter of 1926. In the spring of'27 the titmice ejected the wrens and there has been more or less dispute about it ever since between the two kinds of birds, though I do not know whether the same individuals are concerned. Last year one of the quarrels resulted in one of the titmouse eggs being thrown out. This year the wrens have a family in an adjoining house twenty feet away and I suspect that one of the wrens may have sought to

occupy the titmouse house as a shelter during the night and the disturbance resulted, though this is only a guess. Both nests are fastened to branches of oaks 8 or 10 feet from the ground).

May
~~April~~ 15 No new manifestations on the part of the thrashers; they are incubating faithfully.

( A pair of Lawrence Goldfinches were seen gathering nesting material at the oval lawn). The young spotted towhees left the nest yesterday, before they could fly. I have noticed that this is frequently the case with these birds).

May 16 Brown-eyes visited me four times today where I was working in the berry patch, each time approaching without solicitation and, on invitation, jumping up into my hand for worms. Where I had dug up the earth she got cut-worms and "China crickets." She does not seem to be interested in the berries themselves although other birds are gradually stripping the bushes. On unearthing the cricket, she laid it to one side for a short time while searching for more. This seems to be a thrasher trait. Green-eyes, between meal worms given to him on the oval lawn this morning, dug in the lawn restrainedly four or five feet away and pulled up two angle worms. The first one he laid along side the hole and the second one he partly ate, abandoning both in favor of the "pudding". I examined both worms and could see no difference between them. Apparently angle worms are still not in high favor.

(The spotted towhees are gathering material for another nest. The linnets are building in a pine branch that overhangs the road near the back door. There is clearance enough for the average car to pass underneath without touching, but a truck, such as an oil tank-truck will undoubtedly destroy the nest or damage it. I shall have to raise the branch. While looking

at this nest I noticed a pair of Lawrence goldfinches on the end of another branch in the same tree 15 or 20 feet above the ground. Later observations revealed them as making repeated visits to the same spot on the branch (just above a pair of pine cones). The needles are very closely bunched at this point and I could no see whether they were nesting or not. (Later Julio reported that they are taking in nesting material--if so, this will be the first nest of this finch ~~xxthisxplace~~ here. I have not seen them visit the special feeding station made for them, but other birds do. They had some sort of a conference with the linnets this afternoon at the linnets nest. Possibly on the subject of territoriality, though it seemed peacable. Birds eating the cherries so far are:

Linnet,
Purple finch ,
Wren-Tit,
Black-headed grosbeak,
Spotted Towhee.

The Juncos have completely disappeared--for the first time in six years or more.

May 17 (At 7:30 A.M. I looked out of a north window in the second story and the linnets and Lawrence gold-finches were both working on their nests in the pine tree. The finches came out of their nesting place to an oak branch within about 8 feet of my face and there is no doubt of their identity)

At about eight I went out to have a closer look at the Goldfinch operations and there was Brown-eyes near the base of the pine. I had not seen here within a ~~hundredxyards~~ couple of hundred feet of this place before. As the ground dries these birds have to range farther for food. As a food bearer she was glad to see me and took full advantage of the occasion. These birds do not always eat all they can when I give them food, but only all they want of that particular food at the time it is offered. ~~Thus it is usually their custom, unless they have been off duty a considerable time and a shift is about due, to peck around the~~

Thus Brown-eyes, on this occasion, after eating all she wanted, proceeded to search in the grass and surrounding plants for more food almost frantically. I have not observed such activity before and it gives rise immediately to the thought, that, perhaps, there are young in the nest and the food problem is now urgent. I have never looked in this nest, so do not know what it contains, but, off hand it would seems that young are about due.

At 9;15 a thrasher was singing beautifully in the canyon below and west of the house. I went down to the fence along my western line to a point, as determined from the map, 110 yards from nest NO.3 as the crow flies, and perhaps 150 on the thrasher travels. The song came from the canyon below and, I estimate, the location of the singer at about 100 yards further west and about 50 feet lower in elevation (I have contour maps of this section). The intervening hillside slopes steeply and is densely covered with scrub live oak, baccharis ("Coyote bush""Chaparral broom "), mimulus, etc. It is impossible to see through it. I called when the song ceased and presently a thrasher began calling:"Scrip, scrip." The sound gradually approached and once I caught a glimpse of a thrasher momentarily on a branch of an oak about 60 yards away. From this point the call was much louder. I was, myself standing in a thicket of oak and hazel. I continued calling, and the bird answering and rapidly approaching, apparently on the ground. From its call I thought it to be Green-eyes, but when the bird walked out of the thicket about six feet from me, crawled through the fence and jumped up into my hand, it was Brown-eyes.

The bird certainly could not see me when I began calling; she had never seen me, as far as I know, in these surroundings. I had never seen her anywhere near this place and neither of us from past experience had any reason to expect to see the other

at the time to early

there. Moreover, on my part, I did not think the singer was one of "my" birds and did not expect anything to happen when I began calling. Also I had never heard Brown-eyes call "scrip" before. (10:35, raining! Making due allowance for shortness of memory in connection with weather matters, this is the rottenest May I have ever seen in California--bar none! Cold, windy and almost sunless).

(The linnets are now here in "swarms", in contrast with previous years and there should eventually be many of their nests. Across the street to my south during the past few days they have appeared in flocks of about 20 to 40 apparently feeding in the weeds. This seems late for them to be in flocks, as I had supposed that they had paired off weeks, if not months, ago. However, this is one of our "unusual" Californian years and anything may happen).

Yesterday Brown-eyes, suddenly called from the nest in rich tones: "Hurry up, hurry up, going to stay all day?" This gives the approximate rhythm and inflection and, I believe, also conveys the meaning, for shortly after she was off duty again.

11:45 A thrasher singing in the canyon to the west. It isn't Brown-eyes as I have just seen her going into the nest and it isn't Green-eyes as he was digging in the berry patch while the song was still heard.

(The Lawrence finches fly to their nest with material, both together. The male sits above it and sings, the female goes into it and when finished, comes out and both fly off. So far the female is doing the work and the male is lending moral support with musical accompaniment. His song is easily distinguishable from that of the Green-backed goldfinch, being lower in pitch and of fuller volume. It also has some suggestion of linnet-like phrases. Julio, who can see all that goes on, on the south side of this pine, from the kitchen window twenty feet or

so away, says that a third bird is nesting in this tree and it is not a linnet. I found that he thought all linnets are red. I asked him to show me the picture of the bird in Hoffmann's book and he picked out a female purple finch first and then finally decided, from the pictures alone, that it was a Fox Sparrow! These Monterey pines have rather dense foliage and many good nesting places. The birds, especially at this time of the year, are almost constantly in them. It is almost impossible to find nests in them except by watching the birds themselves as nearly every tuft of growing needles, every accumulation of loose needles and every group of cones looks like a nest. They have never been systematically searched--nor has the rest of the growth here for that matter--and I am sure that there are, in the course of a season, a very considerable number of nests not found at all. Many nests not found, also, are undoubtedly of ground nesting birds. I rarely look carefully for such nests except in places where it is absolutely necessary to water during the nesting season. Practically all of the nests here are found more or less by accident. I am hoping to induce the grosbeaks to build although it is getting late this year, by keeping sunflower seed out for them. They are patronizing the cherry tree fairly well and are staying longer than formerly, but have not been seen at the sunflower station).

A little before this Brown-eyes was seen up in the old oak with a worm in her bill, which she swallowed. About a minute after she made regurgitating movements and the worm reappeared in her bill. The worm fell to the ground. Instead of going down after it, as I expected she would do, she came to me for food, but did not go to the nest.

About 2P.M. I went to the nest where a bird was calling "scrip" and saw Green-eyes sitting along side of it and his mate apparently

away somewhere. He blundered about in the thick foliage making a lot of noise and continued his call. Brown-eyes appeared quietly in the glade sitting on a fragment of bark, perfectly quiet and erect. Green-eyes, on seeing her, dropped to the ground, sang a few notes followed by the "Pit-yourki" phrase--not heard from him before, ran up to her, crouched low to the ground, opened his raised bill and said :"Hair!" without the r. Brown-eyes kept perfectly still, not appearing to notice him, whereupon Green-eyes reached up very slowly and gently and carefully drew the worm out from her bill. Brown-eyes then went up to the nest over my head. I could see hear her tail moving about and her pecking something. This was new. Suddenly she jumped up out of the nest with something in her bill, dropped to the ground, ran rapidly by me and around behind the bushes. I caught a glimpse of the object and it looked like one of the eggs or a fragment of one. I followed her path--roughly a circle about 15 feet in diameter--but could find noth: She was back in the nest again. Meanwhile Green-eyes, contrary to custom, had not left. Brown-eyes came out of the nest again in half a minute, coming to me for worms, Green-eyes immediately taking her place in the nest making a sort of chuckling sound. This sound , as well as the whole procedure, was new to me. I expected Brown-eyes to return to the nest again almost immediately after eating the dozen or more worms that she took, but she did not, disappearing into the brush, leaving her mate upon the nest where he was at the beginning. This all took place within a period of about five minutes. Superficially, heretofore unheard of beginning with Green-eyes' "scripping" from the nest, the performance, in my imagination, seemed to indicate: First, some unusual event, probably the hatching of an egg. Second, Green-eyes' announcement of the event to the

public in general and his mate in particular, probably with a summons to the latter to appear. Third, his conversation on her appearance might have covered more specific details of the event. Fourth, the taking of the worm was merely the repetition of previous acts. Fifth, Brown-eyes' tapping in the nest and subsequent exit, stood for assisting a chick from the shell or breaking up the fragments of an egg and disposing of them. Not knowing whether there has ever been even one egg in this nest, the foregoing is only speculation. However, it is about time to see if anything has happened and, if getting at the nest does not involve too much hazard to the thrasher family, I shall have a try at it now (3:04 P.M.). †

3:11 Green-eyes was on the nest. I had to make a pretty big disturbance to get at it, but Green-eyes did not depart. I felt under him--at least one chick--very small and probably just hatched. Green-eyes himself had so many of his own legs and feet about that I did not care to risk stirring things about too much, so I do not know what else is in the enst at present, but later will investigate on the change of a shift Green-eyes was ~~back~~ tail toward me. When I crushed up through the branches and twigs he stood up and looked down at me, then settled down again. I put out my hand and touched him gently, as I did not want him to explode too violently and wreck things. However he did not cringe, or show fear or even move when I felt around under him, though he kept his head turned and watched me over his back. When I withdrew my hand, he opened his beak at me but made no sound, hostile or otherwise. As these birds behave in the same way towards each other, I have no legitimate grounds for complaint! It is true that I have only partially verified, or otherwise the basic correctness of the foregoing speculation ~~by~~ as a result of my unscientific

forbearance, but I get more pleasure from the friendliness of these birds than I could derive from a possible verification flattering to my vanity.

Nest No.3 is smaller and shallower than either of the others Also it is elliptical in shape,on the outside at least. The birds usually lie along the major axis.

May 18th At 8:25 Brown-eyes took meal worms from my hand, swallowing all but one of them. This one she took down to the ground and broke up. This was new behavior and I suspected that she was preparing it for her young and would swallow it and then feed the young by regurgitation. However she did not swallow it but did take it to the nest which was occupied by her mate. She stayed there a minute or so, but I could not see what was taking place. All I could see was two long tails projecting beyond the edge of the nest. No shift occured, but Brown-eyes came out again and took more worms, swallowing four and taking one back to the nest without breaking it up. This time Green-eyes came out, ran past me in the direction of the berry patch, disappeared and called loudly :"Yurk-yurk, whit whit?" The u as in turk; the "yurk" drawn out and pitched at about middle C, the "whits" higher in pitch with rising inflection on the last one. He then appeared at the oval lawn, where I gave him worms, one of which he carried off toward the nest, running rapidly along the road. All of the forego ing occupied about 15 minutes.

At about nine, while I was standing near the pine by the back door watching the Lawrence finches, linnets and purple finches who are all building in this same tree, a thrasher was heard singing and was located on top of a baccharis bush on the hillside out in the open about 75 yards from me and 50 feet lower. I called and it immediately began answering"scrip, scrip", jumped to the ground, ran up through the brush calling all the time, flew over the fence

ran to the foot of a six foot concrete retaining wall surmounted by a three foot hedge behind which I was standing on the road, still "scripping" excitedly, decided that it could not scale the wall, then ran twenty feet along its foot until it came to a pathway leading through the hedge up to the road and doubled back to me, jumping up into my hand with one last, loud "scrip" as it landed. It was, of course, Brown-eyes. She gobbled a few worms then started on foot down the road toward the nest exactly 80 yards away by the route taken. These birds are always doing something unexpected, and for the first time. This morning besides the frequent trips to the nest accountable for by the young, there was the removal of worms from my hand and breaking them up on the ground and the loud "scrip" while sitting on my hand. Yesterday there was recognition of me at a distance by the sound of my voice alone and numerous other performances covered by these notes.

The thrashers are now ranging far for food. I shall try keeping the ground in the glade moist to encourage the worms and insects.

2:15 At about 12 I placed a ladder and went up to the nest. Green-eyes was on the job, not evidently annoyed at my presence. Soon I heard Brown-eyes making the "blue-bird" signal and she stepped on to the nest and then on top of Green-eyes making little clucking sounds. She had something dark colored and formless in the end of her bill and did not appear to notice my moving forward so that the end of her bill was about 14 inches from the end of my nose. I tested this by spanning the distance and it was about 5 inches beyond the end of my little finger. That means 14 inches. This method of measurement resembles exactly a certain well know gesture of defiance, but the occupants of the nest took no umbrage, although Green-eyes soon crawled out from under

departed quietly and without haste. Brown-eyes remained standing quietly as if to give me a chance to see what was in the nest, showing absolutely no signs of fear. There were three youngsters all covered with a dark mouse-colored down. I was too close for the focus of my glasses and drew back to about 18 inches. Brown-eyes then fed one of the chicks and settled into the nest facing me as before. There was no sign of alarm or resentment and no evident tension. I then offered her a worm and she opened her beak wide like a young bird but did not offer to reach forward and take it from me--she wanted me to feed her!? She kept her beak open as long as I held the worm there, but on account of my awkward position and an obstructing twig I was unable to put the worm in her mouth, so I laid it on the nest, whereupon she picked it up without haste and swallowed it. This is another new performance. As these notes show, on previous occasions I had unsuccessfully tried to get both of these birds to take worms from me while on the nest, although I pushed them against their bills. This asking to be fed is also a new phase, that is, in their relations to me, although it is common with the two adults under observation. It looks as if this change of attitude might signalize their admission of me into their family circle. In fact, on this last occasion, their behavior toward me differed in no essential way from that towards each other under similar conditions.

(12:50. The one legged male linnet that spends most of its time sitting in the seed trough of the Fuchsia station outside the window eating and repelling other birds, has just been feeding a full grown young linnet. I was not aware that he had any family connections and am pleased to see that he is justifying his existence ).

Seen at the same distance and time and under the same conditions of illumination, the contrast in eye color of the two adult

thrashers is very marked. The eyes of the young ones are not yet opened and their bills show no indication whatever of their final form.

I did not again visit the nest during the daylight hours, but the birds were seen to be active carrying food in their bills to the nest.

At 7:30 P.M. an inspection tour showed everything quiet in the thrasher household and the only other birds stirring were the robins and the Brown towhees. Neither adult robin was on the nest and the young ones were stretching out their necks to the sky. Another round at 7:40 revealed neither sight nor sound of bird life, except that it was seen that now an adult robin was on the nest. Except for tree frogs and crickets there was no sound to be heard other than those coming from a distance.

To date this year the following birds have nested here; i.e. nests have been actually found:

1 Plain Titmouse
2 Bush Tit
3 Wren Tit
4 Spotted Towhee
5 Brown "
6 Western Robin
9 Vigor Wren
10 Point Pinos Junco
11 California Quail
13 " Thrasher
14 Alameda Song Sparrow
15 Linnet (House Finch)
16 Purple Finch
17 Green-backed Goldfinch
18 Lawrence "
19 ~~Gambel~~ (or Nuttall(?))Sparrow (50 ft. outside my line, lives and eats here)

Gathering nesting material, but nests not found:

1 Anna Humming Bird
2 Allen " "

Birds frequently seen and undoubtedly nesting either inside the lines or close thereto:

1 Lazuli Bunting
2 Chipping Sparrow

No systematic search has been made of this place as yet and part of the area has not even been visited. Of the 19 kinds of nests found every one was revealed by the action of the birds themselves, although the Wren-Tit's nest required a real search. Not one of the half dozen pine trees has been examined--not even the one that has three nests (all of different kinds of birds) in it. The chaparral bank 500 feet or more long and as wide as 15 or 20 feet in places, measured along the slope, had not been examined except in the immediate vicinity of Thrasher nest No.2 (The Wren-Tit's nest was about 10 feet from it). It is believed that there are many more nests here than have yet been found. The nest of the Wren-Tit was really hard to find as the birds scolded me wherever they found me and it was difficult to locate the optimum position for most intensive scolding, especially as they followed me around, and while thinking of other things I would fail to note where the scolding began. Even after I had narrowed it down to one bush, after deciding to "go to it" and make an end of the uncertainty, I had to search every cubic inch of that bush with both birds in it--although I could see but one as the other was on the nest all of the time and would not fly out of it. In fact I never did see the nest without an adult on it until today when the young had left and were being fed elsewhere.

The Siskins and Black-headed Grosbeaks are frequently here, but I have not found their nests, nor have I ever found and English Sparrow's (House sparrow).

During the nesting season of 1927 I looked frequently for nests, but recall now finding only nests of the two kinds of towhees, the bush tit, the plain titmouse and the wren. Feed, water, protection from enemies, additional cover, have brought

about a change. The foregoing lists do not represent the total number of nests found, only the kinds. The total number to date is about thirty found. A conservative guess would be that there are probably about forty nests of all kinds to date on this area which is about 11 acres including buildings and roads. (Get exact acreage, also exact Lat. and Long.)

May 19 At 7:45 I was watching the Lawrence Goldfinches at their tree and heard a thrasher "scripping" off to the north and 50 feet lower. ~~west~~ on a knoll about 150 yards away. I whistled and called and the sound ceased. Further calling brpught no response, so I stopped and mentally called the trial a failure. However this was premature, for within perhaps two minutes after I ceased calling (Well, a male Junco eating chicken feed on the terrace by the window 8 feet away. Maybe they are not gone after all.) Brown-eyes appeared about fifty feet away evidently trying to locate me as she was scouting about, apparently not seeing me, like a dog. One call brought her to me on the run and although I offered her half a dozen worms in the palm of my hand, she took only one, placed it on the ground, battered it about a bit, then headed for the nest, running as fast as she could along the road for perhaps the first hundred feet, then at a point where the grade changes to a pitch downward toward the nest she took to the air. By the time I had walked to a point in the road near the nest, she was out in the road again, repeating the previous performance. I waited, but she did not return, although she has had nothing to eat, hereself, from me this morning. It is clear that the nestlings have first consideration.

10:30. At exactly 10:00 I placed a chair in the glade about 15 feet from the thrasher nest and sat in it for exactly 20 minutes, in order to see what would develop during a definite period of time. The chair was in the open, but touching a clump

of baccharis and sage growing to a height of about eight feet. One of the branches of the old oak was almost overhead. The sun was hot in the glade. There were many birds about. This is, therefore the record of 20 minutes.

Almost at once the Wren-Tits came to inspect me, winding their alarm clocks. One sat so close that I could have touched him if he had permitted. As it was I held a worm about 2 feet from him, but he refused it. During this time the Grosbeaks, Siskins, Bush-Tits, Lawrence Goldfinches, Purple Finches, Brown Towhees, one Hummingbird, one Western Flycatcher, Linnets, Thrashers, Vigor Wrens were in and out of the glade, some of them remaining there and moving about in it. The Siskin Grosbeaks and Goldfinches sang constantly. The Linnets and Purple Finches intermittently. I heard a long song like that of a Purple Finch in miniature even to an exact reproduction on a smaller scale of that peculiar phrase which it occasionally uses consisting of a series of downward sliding notes-five or six in number. I thought it must be some new phase of the Finch song, but, on locating the singer it proved to be a Lawrence Goldfinch. In addition to singing, the Grosbeaks, there being a pair of them, were talking to each other, and my hopes that they might build here--not yet realized--were further heightened when a beautiful, fully colored male suddenly appeared 8 feet from me and snipped off a dry baccharis twig . On seeing me, he opened his bill in astonishment, dropped the twig and retreated a few feet away into the bushes and talked it over with his mate. Perhaps they will nest here after all. The Siskins were exceedingly noisy.and numerous. Meanwhile the thrashers were going to and from their nest, plainly carrying insects. My principal object in sitting in the glade was to see if these birds might be induced to include me in their foraging

itinerary as a matter of routine during the feeding period. It was soon manifest that Brown-eyes needed little inducement, for, on her second foray she stopped, turned back and came to me, took only one of the worms offered, beat it upon the ground, then carried it to the nest. In a couple of minutes she was back again; but as I had seen her eat nothing herself all the morning, this time I offered her a handful of soft food only. She jumped up, seemed a little disappointed at first, but ate the food. She went around my chair and prospected in the sage near my left hand. I thought she deserved worms, so offered her the open tin box in my left hand, whereupon she proceeded to sit on the sharp edge eating all of the worms that she could get at from so awkward a position, beating the last one upon the ground, then going to the nest and showing no signs of leaving on another expedition. I then left. Green-eyes was taking his turn feeding also, but did not come to me, although on one occasion he dove out of the nest straight at me, turned in the air and then went into the bushes behind me. To come to me, both of these birds had to reverse their usual path from the nest to a directly opposite course.(This about covers the 20 minute observation period).

12:20. The following observations were made between 11:45 and 12:15. On my way to the glade the thrasher were both near the N.E. corner, Green-eyes having a good sun-fit, Brown-eyes foraging. The latter with a worm in her bill, ran towards me. I showed her a meal worm and she did not know what to do about it. It looked as if she would eat her own and then get mine. Then she changed her mind, put her own down on the ground, beat it some more, started toward me again, then went up to the nest. As the twelve o'clock whistles were blowing I sat in the chair. The wren-tits appeared at once to inspect me. Lazuli

Buntings were singing a few feet away. A Western(?) Flycatcher perched 20 feet off looking at me. Green-eyes took a worm of his own discovery up to the nest. Brown-eyes came down and got one from me, eating none herself. The Grosbeaks returned, singing. A Gambel ( or Nuttall) Sparrow sang about six feet away, then moved to ten feet away facing me, singing, so I could see down his throat. A quail clucked in the bushes at my back. Two Lazuli Buntings appeared in the top of the old oak overhead as did also the two kinds of towhees , lower down. Brown-eyes came for another worm to take to the nest, again eating nothing. This time she did stayed there indefinitely, as I left at 12:15. Before this, however, bush tits had come in and also siskins. Ordinarily bird life is not much in evidence here during the middle of the day. The glade, counting from the drip of the outer branches, is roughly circular, approximately 75 feet outside diameter. All of the birds mentioned in these two sets of observations were, at one time or another, during the periods mentioned within a projected area not exceeding 30 feet in diameter.

4:00. 3:45 both thrashers were out foraging. Brown-eyes came back to me, however, and I gave her a good meal of soft food and then a worm. The latter she worried about on the ground for a bit, then took it to the nest. I entered the glade and sat in the chair. In the next 7 minutes--actual timing--Brown-eyes made 5 trips between me and the chair, taking up 6 worms. Each time she flew up off of the ground and perched in my hand and each time she worried the unlucky worm about on the ground close to my chair, but not doing any apparent damage to it as far as I could see. Evidently this is a custom established for the purpose of divesting the prey of inconvenient appendages and is adhered to whether it is so equipped or not. The fifth

she came to hand, in the glade, it was evident that she considered the saturation point of the nestlings had been reached, because, although she worried the worm as usual, she carried it about for 2 or 3 minutes, not knowing what to do with it. She considered burying it at one time, then thought of taking it to Green-eyes, for she ran about 20 feet in the direction of his last known location and gazed about searching ly. No use, he was not in sight, so she came back to me, but I offered no solution of the problem, although I thought t the best way out of the difficulty would be for her to swallow the creature, but she thought otherwise and took it up to the nest. During this 7 minute period all of her movements were, except as noted, were between the nest and me. There was no tendency to seek elsewhere for food. As long as food was needed in the nest, she went directly to the nearest known source, accurately and without hesitation. There was no vacillation at all until she felt that requirements of the young ones were satisfied and the situation was complicated by having such a plethora of food available and nothing to be done with it. I may be putting unwarranted thoughts into the birds mind, but it is clear that she considered storage, unselfishly thought of all food consuming creatures that might be dependent upon her and rejected the idea of eating the worm herself.

7:35 P.M. At 7:20 I started my rounds. Many birds active. The Wren-Tits spotted me at once and followed me scolding. The Grosbeaks were singing. They do not seem to have left the place today at all--a record for here and I am encouraged to believe that they may adopt the place as a summer home. The Gambel (Nuttall) sparrows and the wrens were singing and the two towhees making noises according to their kind

Brown-eyes out foraging near the compost heap (75 ft. N.E. of t the nest). She came readily for worms, taking one, giving it the treatment preliminary to giving it to someone else. However, she took it up into an oak tree above the compost heap which means that Green-eyes was probably there or supposed to be. Shortly a thrasher dived out of the top of the tree--it was too dark to tell which bird--but probably the same bird--and went to the nest. Going there, I found both birds in or on the nest. One left, going S.W., the other went north. Both a few seconds later were together in the road to the north and one of them came to me and ate several worms. (Brown-eyes) (This is new) The last few she macerated and threw down to the ground, one she put back deliberately into the box. (also new) She then jumped down from my hand gathered up the worms and ran off to give them to her mate, apparently. It was now too dark to follow their further procedure, so I do not know what happened thereafter. Previous to this day she has never "prepared" a meal worm. (in this procedure) Today she prepared only and all of those that she intended to give to somebody else. The preparation given the worms when she stood on my hand was, necessarily, different than the treatment given them on the ground, as she had nothing handy to pound them on. It was a sort of crimping operation in which the worm, held crosswise in the bill was shifted back and forth in the direction of its own length andnibbled, thus crimping it. After this operation they were thrown to the ground purposely, not scraped out of the box accidentally. "Preparation" was a sign that she did not intend to eat them herself. Gathering up all four and holding them in her bill all at the same time meant, as this number is not easily handled at the nest, that they were intended for Green-eyes. This might almost have been predicted in advance.+ I have no doubt but that she

+ Later - incorrect deduction.

observes that Green-eyes gets practically nothing from me. (His own fault). She is much more solicitous of his welfare than he is of hers, though he does feed her at times. I still "feel" that my original tentative identification of the sexes is correct, although I can not prove it. Brown-eyes acts more like a housewife than does Green-eyes. I wish someone who really knows, if there is such a person, would definitely prove to my satisfaction which is which.

(Have put a sun-flower feeding station in the Guigne cherry tree (the cherry that always ripens first). If this ~~dxxxx~~ combination does not convince the Blackheaded Grosbeaks that here is the place to build I shall be greatly disappointed. I grafted some later ripening cherries in the same tree and these branches are loaded. Then there is another later ripening cherry tree, early and late peaches and figs. With the berry patch there should be a good supply of fruit until well into November and if the berries are watered in the fall there should be some berries through December. In any event well beyond the grosbeak season,

(Six young Vigors wrens in the lath house this afternoon).

May 20 At 6:30 one thrasher was off to the north east somewhere, "scripping". I stood near the nest and Brown-eyes popped out of it and came to me expectantly. She would not eat anything herself, but took six worms in two trips to the nest, after giving them proper treatment. This was enpugh for the time being, so she remained in the nest hovering the young.

(The Grosbeaks have been singing almost continuously since very early in the morning).

8:50 At 8:25 I sat in a chair on the steps leading from the road at the oval lawn up to the front steps of the house, watching the orioles eating and playing about in their temporary confinement,

wondering how they would act when released, which may be today. I happened to glance down the road toward the thrasher nest and saw Brown-eyes headed for me about 100 feet away. I did not call her, but she was running toward me like a road-runner and, of course, it meant that the nestling needed attention again. I therefore produced the box of worms and held some in my hand at about the level of the arm of the chair. Brown-eyes jumped up on to the toe of my shoe which was about a foot above the ground, as my legs were crossed, then up to my hand, taking four worms, which she prepared, then off at full speed down the road again. In about a minute she was back again, this time taking three worms. In about two minutes, Green-eyes, whom his mate had evidently told about the soft snap, also came running along the road toward me, stopped in front of me, looking at me expectantly but not offering to jump up. I dropped one worm at a time near my feet. He "prepared" each in the same way as his mate, and, between worms, watched me to see whether I would give him more. In this way he got three and headed for the nest on the road at full speed. The next trip was made by Brown-eyes, who took one. The next by Green-eyes, who took three. Brown-eyes was back once more and took one worm, which she ate herself. This meant, as Green-eyes did not reappear at once, that the saturation point at the nest had been reached. By actual timing this episode occupied a little less than 10 minutes. During this time the worms taken to the nest totalled 14 and the distance traversed by both birds aggregated 2,200 feet horizontally and 220 vertically. This tremendous intensive stuffing campaign undoubtedly meant that the birds wanted some time off for themselves, so going back to Brown-eyes taking the worm for herself, the next event consisted of a good meal for Brown-eyes from my hand, after which she ran up

behind me into the upper court for a bath. In a few minutes she came down the steps again thoroughly soaked and spent ten minutes preening and drying (actual timing). She then jumped up on to the goldfinch feeding station (used principally by linnets and at that moment Green-eyes came running out on to the lawn. They opened their beaks and "Haired" (no r) at each other; B.E. dropped to the lawn, they cavorted about for a bit, Green-eyes went up to the feeding station from which he flew toward the nest, B.E. came to me, sat on my hand to get three worms, made off down the road toward the nest and after havin g traversed about 75 feet was joined by G.E. and the two disapp peared at the bend of the road, taking a short cut through the trees to the nest. I omitted to not that,on one of his trips to the nest, Green-eyes flew about 100 feet at a height of about 18 inches above the road. From the number of worms taken to the nest during this period, it will be seen that the thrashers food problem for the present, at least, is not so difficult. It has also been clearly demonstrated indicated that the thrash ers--even including the independent and standoffish Green-eyes, are not only willing but eager to make me a regular feeding station. No doubt,if I stood by at all times,they would seriously consider giving up all other food sources.

(Orioles) About noon we liberated the orioles, Mr. W.F.Sampson and Mr. J.A.Brock's son, Donald, being present. The top of their cage was arranged beforehand to open up,like the lid of a chest,by pulling a cord. We stood about 50 feet away and opened the top slowly and quietly. One female flew out almost immediately. The other, although it was evident that they had seen that the top was no longer there, took their time about leaving. One male looked up at the open space overhead , ignored it, and went down and

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fed. The other two had retreated into the closed portion of the cage. In about 5 minutes the male above referred, left quietly. It was fully ten minutes before the other two left. None of them were at all panicky. All disappeared into the foliage a few feet away and were not seen for about an hour. However no effort was made to find them. As it was thought that the small Guigne cherry tree would be a great attraction to them , we went and sat about thirty feet from it and watched. Numerous grosbeaks, linnets, purples finches, etc. fed greedily in it from time to time and the liberated orioles were joining in the feast. Some of the orioles were seen and heard until nearly seven o'clock.)

While we three sat on the low wall watching the birds in the cherry tree, Brown-eyes, who had not been invited to join us, shortly discovered us and thereafter "horned in" on our party, making regular trips between us and the nest about 200 feet away carrying worms to the nestlings. I handed the worm box to each of the other members of our party in turn and she took worms from each of them, jumping up on to the hand of one of them and would have done the same with the other one if she had not been frightened by a Red-tailed hawk that was sailing too near, thus causing her to retreat. On this occasion as on other similar ones I have noticed, when the worm box changed hands in her absence, on her return she appeared a little puzzled as to whether she was expected to come to me or go to the person with the worms. The worms, however, have always won, but interruption of established custom does cause a little hesitation on her part in adapting herself to the new conditions.

May 21 Left here at about 6:30 A.M. and did not get back until after 5:30 P.M. Julio says that he saw some of the orioles

during the middle of the day. I saw none at all.

I called at the thrasher nest and its occupant, Brown-eyes, came down out of it at once, carrying about 15 worms up to it. At about 7: 25 Green-eyes was in the nest, but Brown-eyes silently appeared at my feet and once more filled up her offspring. When that was accomplished it was too dark to follow the movements of the parents, although there were some comings and outgoings. When there are young in the nest, after a few days there is no hesitation in leaving them uncovered from time to time. I suppose this is done when the heat regulating mechanism of the young begins to function. However at present when the young are fully fed for the time being one of the parents covers them and does not appear to leave until more food is considered to be necessary or until the mate brings food.

The parents come to me for food much oftener now than before the eggs hatched, naturally, I suppose but the amount of such food which they eat themselves is almost, in the case of Brown-eyes at least, negligible as compared with that formerly consumed. Consequently I wonder if she is not really eating less from all sources during this period. I am wondering also if she has not a mild attack of the gout as a result of previous overindulgence in rich foods, as, occasionally, for the last day or two, she has seemed to favor one foot, when standing idly by me, by tucking it up amongst her feathers and standing on one leg.

(While at the glade this time a Russet-backed thrush was in the bushes calling its "whit" about 15 or 20 feet away)

May 22 At about 8 A.M. one thrasher was on the nest, Green-eyes. A walk about the grounds quietly (so as not to attract the attention of Brown-eyes as I wished to call her from some place where she could not see me) failed to disclose her presence anywhere. I assumed that she was down in the thicket to my

west, although there was no sound coming from there. I called. - Immediately there was an answering scrip from a long way off, followed by a succession of them rapidly coming closer. There was no possibility of her seeing me as the growth in between is almost of jungle character. Her course could be traced by her calls and the sound of moving branches and leaves, for when these birds decide to go any place in a hurry they keep things in their immediate vicinity pretty well stirred up. On arriving at the base of the retaining wall she climbed up through a pine tree, came through the hedge without looking for the gateway and straight to my feet, scripping excitedly. Even when sitting on my hand picking up worms she continued to scrip but gradually tapered off and calmed down, as she wanted all the worms there were and immediately. She managed to gather up and prepare ten or more and get them all nicely arranged at the same time cross-wise in her beak from "hinge"to tip; but it was a feat, accompanied by frequent dropping and picking up again and arranging the whole lot in roughly parallel lines on the ground and then starting all over again, more than once.(If one does not think this is hard to do let him take a pair of tweezers and try to pick wriggling worms up one at a time without dropping any and have them all neatly arranged parallel to each other and crosswise until there are ten of them). She still wanted more, but her bill was full, so she ran off down the road. I thought this should be enough for one feeding, so went into the house by the back door, but evidently pickings had been poor this morning, for as I looked out of the kitchen window, there she was looking for me. I surrendered and went out on the steps and she took all that I had left, running and flying to the nest. I went in and replenished my supply and without calling strolled down toward the nest and then turned back to the house and up a path overhung by

oak branches, conscious that I had performed a good job job completely and thoroughly and that there would be no need for more food for some time. However, there was a rustling overhead and a loud:"Whit you too-whit-you, whit, whit!" right over my head. Brown-eyes had spotted me, saw me about to escap and, undoubtedly had flown after me and the call was meant for m me to stand and deliver, for there she was hopping down to me from branch to branch when I stopped. She once more accumulate a full load of ten or a dozen worms and set out for the nest again. From first to lastthis probably took about 20 minutes. As I finally retreated, a Russet-backed thrush was singing its spiritual lay from the vicinity of the cherry tree. That littl tree would be bare now if it had not held an enormous crop for e so small a tree. Beside the birds already listed as feeding upon it, the robins are now taking the fruit th their young and it has also withstood assaults from the thrush, the orioles (not seen this morning) the song sparrow and the Anna and Allen Hummers. This tree is a prize, and I shall have to honor it by decorating it with "boughten" cherries thus extendi its career of usefulness. It is the best bait I have had yet. The thrashers ignore it.

At 10:00 I entered the glade and sat in comfort in the chair. Brown-eyes, outside the glade, standing on one foot, saw me enter and made little "Churks". I ignored her entirely, not even speaking to her. She sauntered over to me and began preening in the warm sun, about two feet from the toe of my right foot, my left leg, being crossed over the right. She also was perfectly at ease and seemed only to want company, as she did not look up at the worm box which I held in one hand on my knee. After a good toilet she reached over and pecked the toe of my right shoe several times and was about to

jump up on ~~it,~~ as she crouched for a spring--but evidently remembered that, on a previous occasion she had not been able to stick on it because her feet slipped off. So she backed off a bit, crouched and jumped up on to my knee, took a worm out of the box, looked for a place on my knee on which to pound it, decided that would not do, so took it down to the ground and treated it there. She then jumped up again with the worm and replaced it in the box, selecting another, which she laid on my left thigh without attempting to pound it. (She was learning!) But that worm slipped to the ground on my left side and fell amongst some fragments of bark, etc. and could not be seen, even by me. She marked its general direction, however. Without attempting to recover it, selected several more worms, prepared the on the ground to my right, went around to my left, found the lost worm and then took them to the nest. On her return she went around to my left side into the bushes (My right side was toward the nest) and jumped up on to my left elbow where it was resting on the arm of my chair, walked along my arm and my left thigh to the box from which she took more worms for the young. As she evidently needed a place on which to pound them nearer to the box than the ground level, I placed the cover of one of my seed tins on my lap, hoping that she would use it for that purpose; but on the next trip she ate most of the worms herself, taking but one or two to the nest, where she elected to retire for a time. Now I am willing to admit that, if there was not intelligence shown by that bird on this occasion, then there certainly was no intelligence anywhere in the glade with the two of us occupying it!

At 11:00 the Russet-backed thrush was singing in the Thrasher's glade. I put a ladder up to the nest. The parents were away. The young birds do not have their eyes open as yet. (3 chicks) Their skins are black in the sense that a very dark negro is said to be black

Their ear openings are very large and their mouths are split a long way back into their heads so that the yellow "hinges" are well aft of their eyes. They must be well fed as they were sleeping soundly did not open their mouths even when Green-eyes came to the nest and plumped himself firmly down on top of them. He regarded me without evident hostility, but at the same time seemed to think it was just as well not to take any chances. He offered them no food and regarded my tender of worms to himself with indifference. Some time I hope to be able to hit upon the proper designation of his eye color. (See Later)

(The grosbeaks have found and now use the sunflower feeding station in the upper court. No signs of orioles. The Green-backed Goldfinch is now "alwys" on the nest and has been for several day

At about 11:30, while attempting to entice the thrush from the bushes near the goldfinch nest, Green-eyes came out instead and took worms to the nest. I moved on to the cherry tree to watch for the orioles, and Brown-eyes came limping from the direction of the nest, for she was distinctly lame. On arriving she stood on one foot for a time, then had a good meal of soft food which I offered her before the worms. She then gathered up all the worms her bill would possibly hold, until it, in fact looked like a centipede and then waddled off up the road toward the nest, as she cannot now run very well. In gathering these worms, which happened to be small ones, she made such a ludicrous job of it that It was difficult to keep from bursting out laughing right in her face. It was like trying to repress a sneeze.

3:00 P.,. We are making progress. I went to the glade, sat in the chair with a supply of soft food and worms. Brown -eyes came from someplace, pecked about, stretched and preened at my feet. In a minute or so she thought it well to come up and investigate. She found both worms and soft food and although, she herself was very hungry as will appear later, she took

five worms up to the nest in one bill full and was back at once. I now wished to see if she gave them all to one nestling or distributed them amongst them. So when she had gathered together 5 more while sitting on my knee and had started for the nest, I went up myself, getting there before her. She pushed all of them down the throat of one bird running her bill in clear to the "hilt". Meanwhile Green-eyes came up the tree with an angle worm which he crowded down one throat by reaching under his mate and pushing her slightly to one side. He wanted to stay there and sit on top of Brown-eyes, but she wriggled out from under and started down the tree, while her mate settled himself on the nestlings, trampling all over them. This was not going quite properly to suit me, so I headed B.E. off by showing her the box of worms about 2 feet lower than the nest. She came promptly horizontally across the tree got ~~a mouthful of~~ about four and struggled up through the mass of small twigs to the nest, climbing on top of Green-eyes who raised his open bill asking for some. I thought he meant to eat them himself, which, under the circumstances would have been a rather shabby trick, but he was not quite so mean as that, for he took one from her bill, stood up, gave it to one of the chicks, while his mate shoved all of the three she had left down to the bottom of another one. Both adults were now standing on the rim of the nest looking at me expectantly, showing no disposition to leave, so I held the worm box against the nest, nearest to Brown-eyes, her mate peering over her back from the rear. B.E. began taking worms several at a time without "preparing" them and pushing them down the yawning throats, both adults chuckling and clucking and G.E. taking some from his mate's bill and helping with the loading operation. Finally he managed to crowd to the front too and get worms from me direct which he fed to the young. It did not take

long to get all three of the little tanks(for there are definitely three) filled up, whereupon Brown-eyes started eating the worms herself and after that the bran a food that she has always scorned heretofore, thus showing that she was really hungry as previously stated. I said to her:"That is not food fit for thrashers, come down and I will give you something you like". I then went down to the chair and Brown-eyes came down also to get a good meal of soft food. After this she stood on the ground at my feet--on one leg--all puffed up and apparently satisfied except that her foot or her leg evidently pained her. Green-eyes remained on the nest hovering the young. I find--or think I do--that if I talk to these birds while they are near me, they are more at ease. It is worthy of note also, that while the birds were taking the worms out of the box while up in the tree, they merely stirred the bran about to uncover the worms, instead of scraping it out violently and throwing out worms .

5:55 10 minutes ago I went into the glade without calling. Brown-eyes soon appeared out of the bushes and ate a little soft food uttering little high-pitched squeaks that sounded like: "Meaning me?" and might readily have fitted into our conversation in those exact words. She jumped up quickly when I showed her some worms and went up to the nest, where I found she had given a part of them to Green-eyes who was standing over the nestlings with them in his bill. They watched me parting the branches then fed the young with the worms which they already had; then Brown-eyes took more from the box which I held by the nest, Green-eyes taking some from her. These they fed and both settled on the nest, seeming satisfied to let matters stand as they were, so I departed. As before, the adults seemed to hold a conversation as to best ways and means to

handle the problem. It must be remembered that all of this experience is as new to them as it is to me. I neglected to note positively whether the young ones have their eyes open, but if they had I think I would have noticed it. I shall have to erect some more convenient and stable structure at the nest as there is danger of slipping and pulling everything down under present conditions.

(No sign of the orioles today)

May 23rd. About 8 A.M. Brown-eyes, with her mate looking on, collected from me a big load of meal-worms, at least a dozen at one time and took them to the nest. Two or three more suffices for the time being. After this she played around in the bushes back of my head and, from the sound and her shadow, she considered jumping upon my shoulder, but did not.

(About nine the small cherry tree was a place of great activity grosbeaks, robins, thrushes, wren-tits, purple finches and linnets, spotted towhees and humming birds. Many of these in the tree at the same time. No sign of orioles. The robins take cherries to their nest, sometimes without removing the stones, as the presence of the latter at the nest shows. There are four yuung in the nest about ready to fly. They stretch their wings and pick off the "dandruff").

9:20. Brown-eyes in the berry patch needed only three worms for the young and a little soft food for herself. On visiting the nest, she was seen to be sitting placidly on it uninterested in worms. Green-eyes climbed up the tree "scripping" and carrying one meal worm which he must have found somewhere. They talked and B.E. moved a little to one side so that he could deliver his worm. They both then showed interest in the box of worms, taking, however only three or four, then standing inactive looking at me. This meant no more worms and that

considered
my continued presence was no longer necessary for their happines
so I retreated to the chair. G.E. settled on the nest; B.E.
presumably to remove the sting from the snub just administered
and to show that there was no animus back of it, came and stood
by the chair for a short time doing absolutely nothing. She then
walked slowly away some pisce. These veal worms certainly
relieve
a lot of pressure during the feeding period.

The young were carefully scrutinized at "reading distance".
Their eyes are not yet open . I think that there is little doubt
of the third ones being hatched on the 17th. If this is correc
and they were hatched on successive days, then they range
in age from 6 to 8 days.

At about 3:30 as I was cleaning soft food from a dish near the
shop, Green-eyes took several loads of it up to the nest,
although the quantity each time was very small. This is the
first inanimate substance which I have seen carried there.

I went to the glade and sat in the chair, but Brown-eyes
did not appear. Green-eyes, though, made regular trips between
me and the nest, taking the worms from the ground at my feet,
carrying 41 worms in ten minutes. He looks more slender than hi
mate, is more alert and much quicker in his movements. This is
the first time he has done such intensive feeding and it looks
as if Brown-eyes had been away some time, especially as she has
not looked me up in the garden where I have been working for
several
hours.

About 5 I went to the glade. Brown-eyes was there shortly and
began her regular express service, I on the delivery end, the
baby thrashers on the others. Green-eyes came down from the
nest and joined the stuffing campaign, taking worms from my hand
this time, but not jumping up as hismate does. First he watched
Brown-eyes as she passed by him fully loaded, then he begged

her for worms by crouching down, opening his bill and raising his ridiculously small, round and concave wings until they nearly met over his back. On a couple of trips Brown-eyes stopped and let him take two or three from her each time. Once instead of continuing to the nest, she returned to me to make up the shortage caused by giving a part to her mate. All worms taken by Green-eyes in this way were faithfully carried by him up to the nest. He must have seen that I did not pounce upon his mate and tear her to shreds, for he abandoned his former procedure and was soon getting his worms direct from my hand, making trips alternately with her until my local supply was exhausted.

Brown-eyes does not like to jump up very far, preferring always to take off from the highest point available . She also likes to see in advance, if possible, just what kind of a landing field she is going to have. Further she uses her wings as little as possible (This seems to be true of both birds). In jumping up to my lap , knee or arm, when I am seated, she has to use her wings and often falls short. Sometimes she backs away, cranes her neck to have a good look, then makes another and more strenuous effort. If there is an intermediate point, however, conveniently located, she prefers to make even this short flight in two stages, using sometimes my foot, a rock or anything that gives her a higher take off and a better view of her destination. She also uses my seed cans when I have them with me, but their covers, like my shoe, are too slippery to be used by preference. Sometimes when apparently tired of making this "long" jump she will go around to the other side of me, climb up into a sage brush until she is level with my lap and sidle out on to a small branch to take off from there, but give it up, because, although the horizontal

distance to be covered to reach me is often only 6 inches and seldom over two feet, the branch sags so much that she has reall; gained almost nothing in height and, furthermore, has an insecur take-off to boot. I have seen her spend several minutes in ineffective efforts to reach me thus from distances of the order stated, only to abandon the effort and jump up from the ground in the end. During these trials she has tried the bushes at diffe: ent heights and many different positions and appears to realize that the effort will be less in the jump or flight, the higher she gets. However, when she does get higher there is always something in the way, or she does not like the place where she will have to land or something. These efforts are comical becaus of her evident earnest concentration and ineffectual efforts to reach an absurdly easy goal.

I derive a mean sort of satisfaction, as a clumsy human being, in observi the slips, stumbles and falls of these birds. They are by no means infallibly accurate in their muscular control. Brown-eye for example, cannot stand on one foot without swaying perceptibl Both birds often slip and I have seen them stumble over an objec when running and fall flat . When in twiggy growth in a tree or bush, when it seems even to me that there is plenty of room , th struggle, get caught by twigs and have all the minor accidents that we have; yet they, judging by the small size of their wings and their habits are especially designed for work on the ground and in the bushes. Their flights a re, of course, short. They seldom fly at an upward angle except for a matter of a few feet. Even this they will not do unless there is no wa way out of it . They always climb up into trees, instead of flying. If one sees a thrasher on a high point, it is probable that he has either climbed there or has flown there from some higher point to which he had climbed previously. They are very gentle birds.

About 6 o'clock in passing the glade I saw the two thrashers worrying a large, very light colored, worm-like creature fully 4 incehs long and thicker than a lead pencil as neaf as I could judge. Each took turns at slapping it around on the ground. Finally eached siezed it by an end and pulled hard with feet well braced. Whatever it was, it must have been tough, as it did not break. Green-eyes won and took it, presumably, to the nest as he headed in that direction. A few minutes afterward I ~~xaxa~~ offered Brown-eyes an angle worm, also about 4 inches long, which she took and broke up into short lengths after a struggle of perhaps 5 minutes; the long time required being caused partly by the way the pieces flew about and had to be found again. She got all the pieces she could found and took them to the nest, but I think that there was less worm than when she started.

May 24th. At 8 A.M. in respons to call Brown-eyes came from the hillside below to the north-west, carrying something in her bill. This did not deter her however from coming for worms, when the object was seen to be a China cricket divested of legs, etc. She laid this on the ground in order to get the worms and then ran rapidly to the hest, returning shortly for a new load. This time she got a good one of at least 20 worms--a feat requiring great patience--as many were dropped and picked up again, only to have more fall out of her bill than the one or two she was seeking to recover. At one time, when she had dropped ~~an~~ one, three more fell out. In trying to get these, the number increased to 7. Then she put them all on the ground and started all over again. Finally she had to abandon three of the original number which she had gathered. I picked these three up and put them in the box and on her return she looked for these three in the place where they had been dropped, before jumping up for more.

These birds will never abandon a lost worm without having first made a thorough search for it, even when they know there are plenty more right at hand. Thus Brown-eyes when, standing on my hand, will often jump down to the ground to get a worm accidentally dropped and then return to my hand for more. At other times she will mark the location of the dropped worm and either get it on her way to the nest or the first thing on her return. A worm that has been unsuccessfully searched for and apparently definitely abandoned will often be looked for again several minutes after it was lost in the first place. In this way, they lose practically no worms. As previously noted, also, they will pick up the crumbs of soft food dropped while eating from my hand even though there is still a plentiful supply remaining in it.

About 11:15 Mr. Cain came to take movies of the thrashers. Brown-eyes was very much disturbed by the presence of so many people in the glade(four, including myself) and did not want to come out of the brush, while with Mr. Cain, a few minutes before, as the sole wittness besides myself, she was hardly nervous at all. She finally came out, but preferred to keep me between the camera and herself and when she did come was very fearful of the noise made by the camera, retreating without getting all the worms she needed. Also as the camera was just below the nest, she was fearful of going up to feed the young, but finally did so and stayed there. When Mr. Kane mounted the ladder and parted the branches to get a shot of her on the nest, she was still more frightened and when he reflected light on her she fled in panic, to return to the tree, however where she showed the greatest anxiety for her brood. All her actions were in marked contrast with her actions when she is perfectly easy with me alone. All the little nuances of behavior were missing. An hour or so afterwards I went out alone

primarily to see if it would be possible to substitute soft food for worms, in part at least, as a food for the nestlings. As thrifty as the birds are as regards waste, they still do not appear to have heard of the depression. Brown-eyes came at once without hesitation. I tried her on some special soft food soaked with water according to Mr.Brock's prescription for young birds. She took a little but wanted WORMS. I gave her some which she took to the nest. I then followed and offered her soft food in a spoon(so that it would not be broken up in handling and also in order to reach her better). After looking at it for half a minute or so, she took some which she ate herself, then stood up in the nest, turned around to face me and began gobbling it at a great rate, without giving any at all to the nestlings. Her economical instincts were again shown, as she picked up all the crumbs which dropped into the nest, while the spoon still held a good supply. While this was going on Green-eyes hove in sight with some sort of a large grub and all necks were immediately stretched toward him, including Brown-eyes'. (The young had not asked for food while Brown-eyes was eating) G.E. gave the insect to one of the young and immediately crowded forward to get his share of the soft food, eating it himself freely. It was a pretty sight to see these two thrashers both eating out of the spoon at the same time, with a small forest of heads and neck below them. Green-eyes was the first to recognize this food as being probably good for the brood and began ramming it down their throats as he took it from the spoon. Soon they had had enough and the old birds stopped offering it to them and stared fixedly at me. I knew what that meant and departed, so we have another re demonstrated food resource for the youngsters. I am hoping that by helping out in this way the young birds will get used to me before they develop fear and that I may be taken into the family

circle before they leave the nest. I would like to add them to the permanent population of my hilltop, but fear that the doctrine of territoriality will operate against them. The bills of the youngsters are beginning to show a little downward tendency at the tips, but their eyes are not yet open. In a day or so I shall try to feed them direct, if the old birds will permit.

May 25th At 8 A.M. I went up to the nest, both parents being absent. The young are showing pin feathers, and at least two of them have their eyes open, but they were mere slits. I was trying to get at the third one to examine it but Green-eyes appeared scripping and plumped down on the nest, so I left. Brown-eyes came to me in the orchard, very eager for worms. She would not wait for me to transfer worms from the box to my hand, but, without invitation, jumped up and dug them out herself without waiting for me, almost touching my face. She made a number of trips back and forth to the nest, about 50 feet away and was all eagerness, in striking contrast to her behavior before the camera yesterday. She took all my worms, about thirty, to the young and ate soft food herself when these were gone. She then hung around me occasionally jumping up into my hand to look at the soft food to see if, by some miracle, it might not be worms after all. As I walked away slowly, she followed me like a dog. As I paused to look at the fig crop, she climbed up into the tree and out along the limbs toward me so as to get a near view of my upper stories in case any worms might have been overlooked. She then came downward, altogether followed me for about 200 feet, before giving up the job as hopeless. When last seen on this occasion she was standing erect in the middle of the oval lawn watching me going up to the house, having apparently forgotten all about hawks and cameras.

At 9:30 the adults were not on the nest, but I heard Green-eyes

scripping overhead and he was seen running along a horizontal branch of the old oak, looking down at me. I held the box of worms open below him and he jumped down but not to the box and, still"scripping" gathered worms dropped to him and fed the young. The adults now spend a good deal of time away from the nest, but one or the other appears rather quickly when one approaches it near. I saw nothing of Brown-eyes, but evidently she knew all about my movements, for I went directly to my shop which is about 100 feet away and opens into a small enclosed court with a six foot wall on two sides and house walls on the other two and she evidently followed me there, because as I looked through the shop door back into the court at a piece of work I was engaged on in the court, there was Brown-eyes coming through the gate after me. Of course I gave her worms to take to the nest and she ran off. It was almost a certainty that she would be back again, so I went into the shop and sat down facing the double door which opens into the court, as I wished to see if this bird would have cheek enough to enter into the core of my private domain, with its motors, engines, lathe and miscellaneous machinery and what not. In about a minute she was back, scrutinized my new stage setting curiously walking about the floor and under my chair, not forgetting the worms. On her next return trip she entered, then sat upon the top of the open door wiping her beak on it and trying to figure out how she could best dive down upon me without getting tangled up in things, as from her present location, one short quick turn in the air would be necessary to complete the evolution successfully. However, she gave up this either attempt, for the reason stated, or else discovered that the worm box was practically empty--which I believe was the true reason-- and departed. It is clear that I can no longer defer erecting some sort of a rigging at the nest whereby I can comfortably cater to this family with less luxurious provender, if I am to remain financially sound and,

at the same time, protect my secret haunts from invasion by the birds of the air. Incidentally thid shop has a sky-light in the roof, and to date I have had to catch humming birds, wrens, titmice, towhees, Gambel sparrows and butterflies that have come in through the open doors and flown up into the skylight, from which point they will not descend. At other points inside the shop also I have extricated snakes and lizards.

About 11:30 Brown-eyes suddenly appeared 'scripping' in the shop yard where I was building a platform to place at the thrasher nest. She jumped up on this platform which is about 5 feet high to get worms, and on a later trip I got a picture of her there. (F-11-1/50-11 feet). At 1:30 I slipped in to the glade as quietly as I could and sat on the chair, making no vocal sound, with the box of worms on my knee. In less than a minute Brown-eyes sauntered into view, came to my feet and preened, using oil from her oil gland. I made no sound nor movement. Soon she glanced up at me--the first direct look I could detect--hopped up on to one knee then to the other and swallowed two worms for herself and took four to the nest. (She does not kill the worms) She took up 11 worms in 4 trips and, as she had not returned after minutes I returned to make this entry, after seeing that she was settled in the nest for several minutes. During this period I did not utter one sound or make any inviting gestures. She talked a little and was as deliberate as an old cow. When at ease this bird has a habit of puffing out her feathers and closing them in tightly again in rhythmical fashion .

About 3:30 the platform at the thrasher nest was finished and I now have a safe and convenient place to observe the family. Green-eyes was on duty during the digging and hammering incident to the erection. When everything was finished I went up to see how everything "worked". The nest is about breast high and I have an unobstructed view. Brown-eyes arrived with two immense grubs of some sort, both of which she

gave to one chick. I then offered ~~xxix~~ the parents moistened soft-~~xxixxx~~ food which they ate themselves, picking up the crumbs from off of the babies. This food was given to them in a spoon. Green-eyes--the wild one--would open his bill like a young bird and allow me to put the food in either with the spoon or by hand, seeming to prefer the latter method, though he would help himself too. As long as I was at the nest, which was about 15 minutes, both adults remained there taking food placidly and apparently happy. They gave none of it to the young, who are now able to make a low chirping sound that seems to come from far away. Their mouths are bright yellow inside. When I left, so did B.E., her mate remaining on duty. He has stayed in the nest continuously certainly for more than an hour.

May 26 The behavior of Green-eyes is puzzling. At 8 A.M. he was holding the fort with no signs of his mate about. I offered him worms and soft food while he was hovering the young, but he would not even look at them. From previous experience, this was not unexpected, and I was quite sure, based also on past observation, that when his mate appeared at the nest, he would change his mind. In a few minutes she came with a large China Cricket, which Green-eyes took from her bill and tried to push down the throat of one of the babies, but due, principally I think, to his awkward position, he could not make it. As a consequence he gave it to another one instead. Immediately Green-eyes was all animation, reaching for the food in the spoon and taking it in large lumps. Brown-eyes, from her position behind him, reached over his back for her share and both continued eating hungrily for several minutes, picking up the crumbs that dropped on and in the nest and on the young birds, keeping everything tidy while the meal was in progress. They did not offer any to the youngsters, who, during this period remained perfectly still to the eye, but kept up an incessant fairy chorus, almost inaudible and seemingly coming from a remote

distance. They do this without moving or opening their beak or eyes. When the parents had had enough, they closed up like clams and stared at me fixedly. They would not even take the worms now offered them, either for themselves or their brood. I could wipe the remains of their meal which adhered to their bills with my fingers, without obvious objection from either of them, Occasionally, when doing this, one of them would open its bill slightly; but they are constantly doing this when they touch each other, so when the act is performed at my instance, it does not appear to be due either to fear or hostility. The question that arises with regard to Green-eyes' behavior is, naturally, why is he such a clam and so stubborn on the nest, until his mate arrives and why does he then become so suddenly eager for food that he is the first to reach for it?

(Mr. ~~Kane~~ Cain told me last night that there were no films in his camera, as he discovered later!)

9:30 I find that Brown-eyes, who was on the nest at this time has the same characteristics, but is not so uncompromising as her mate. Rather than see a worm crawl off the edge of the nest and be lost she did take it and eat it herself and also took another one from my finger tips; but she distinctly preferred to be le't alone. I suppose the bird occupying the nest is there primarily for the protection of the young at the time. Feeding them or themselves during this period of nest occupancy is not a part of the immediate programme. (Chased another Brown-Towhee out of the shop. It did not have to be caught).

Mr. ~~Kane~~ Cain came about 11 to try for some movies of the thrashers, but the birds were very shy and even the tamer one persisted in keeping me between the camera and herself. They became very wild and did not seem like the same birds, yet 15 minutes after Mr. Kane left and the birds calmed down again, Green-eyes was singing from

the top of the old oak, looking down at me occasionally where I stood on theplatform at the nest, with no evident concern. When Brown-eyes returned to the nest, as she did shortly, it was with no sign of fear. She had a huge Jerusalem cricket (as Mr. Kane tells me is the proper name of these creatures)and when I offered her worms, took them freely and gave them to the young, then ate a few herself, following with soft food out of the spoon. I note on this occasion, as on previous ones, that the droppings of the nestlings are not carried away by the parents, but swallowed by them. The droppings appear to be enclosed in a sort of skin. About 1:30 when I went to the nest again, the adults were away, but Brown-eyes appeared immediately, sat on the edge of the nest and ate more food from the spoon. She did not object to my handling her babies without taking them from the nest and when I put the tip of the spoon into the mouth of one of them, she watched the operation placidly with her head about three inches from its head. The youngster could not, of course, take the food as I had no way of pushing it down its gullet. I was merely observing the reactions of both birds. It did, however, try to swallow and did not shrink from me.

After watching the behavior of these thrashers during the attempts to get movies of them, I can appreciate more than ever before that they do not like to have strangers about and are essentially creatures of the wilds.

7:40 P.M. Although it is fairly dark, Brown-eyes, just now has finished taking worms to the nest from her perch on my hand, making five trips, carrying, perhaps 25 worms. I believe that one cause, perhaps the most important of the failure to get the pictures today was that it was too near midday and the chicks were too well fed by that time. Further, birds are least active, usually in the middle of the day.

May 27th. It is the movie camera that frightens the birds, even when the camera is not in action. About 9 A.M. I set up a moving picture camera with remote control near a currant bush at the berry patch and then enticed Brown-eyes, after much coaxing, into the field of view for an instant. (Distance about 9 feet, 1" lens. diaphragm f-5.6) I do not know whether I got her or not, if so it was only a flash, as she was very camera-shy. I moved the camera into the glade, Brown-eyes insisted in keeping behind me and then very timidly, although I had the camera concealed as much as possible by oak branches. To my surprise, Green-eyes was less afraid than his mate andhe came for worms pausing for an instant on a stone at my feet which I had placed as a take-off for thebirds. He left quickly but I do not think it was the noise of the camera, as he probably would not have stayed long any way. When I went outside the glade, leaving the camera behind, both birds came running to me without being called and Brown-eyes jumped up into my hand without hesitation and carried worms to the nest. When I went to the nest and offered moistened soft food, she ate it from the spoon. When she would take no more, I offered it to the nestlings, but each time Brown-eyes would reach forward and take the food herself, but only when it was offered, not to her, but to the young. It seemed as if she did not want them to have this food. As these notes show, on first making the experiment, both adults fed the young with food from the spoon. Since that time they have not done so, although they continue to take worms from my hand, while at the nest, and feed the ypung . This morning for the first time one of the nestlings shrank from me when I touched it.

12:45 Still unsuccessful in getting the birds to pose, though B.E. made a momentary appearance in the field of view, getting one worm. It is very hot in the glade and all of the thrashers, including the nestlings, have their bills open to cool off. The nest is so located

that only small flecks of sunlight reach it. In all respects, except for instability of foundation, it is well located.

About 12:30 B.E. brought up a large Jerusalem cricket. This is practically the only kind of insect she feeds of her own finding. While she was eating out of the spoon B.E. arrived with worms of some kind. I could not tell what they were as he pushed them down the gullet of a different bird too quickly. Both adults remained standing on the rim of the nest taking meal worms from my finger tips and gave all of the five or six I had to the chick first fed by B.E., making no attempt to apportion them amongst the whole brood. Neither adult appeared to mind my poking about the brood with my fingers and the young ones did not flinch. On returning with some soft food, G.E. had gone but B.E. still sitting on the rim was very glad to have it. She gave none to the young. Even when I put the spoon partly in the mouth of one of them, she reached in an took food from it. About this time the chick fed by G.E. seemed to have some sort of spasm. Its head jerked backward and was laid flat on its back. Its feet quivered and were thrust out upon the rim of the nest. It looked as if it were dying. B.E. , though did not seem to be concerned; I straightened out its neck with the spoon and it seemed to be all right again. Their feathers are bursting out of their sheathsrapidly now and their breasts are covered with feathers, About 2 o'clock Brownie was shading the young birds with her body and wings. When she camedown I tried for another picture but she was still camera shy.(Meanwhile I had placed some pine branches to give the nest better shade). In about five minutes Brownie was in the upper court bathing and when she saw me sitting on a bench by the oval lawn in the shade of a small oak, came and jumped up on the bench beside me, then into the top of a Regal lily from which point she could get a better birdseye view of me and surroundings, and seeing

no cameras (perhaps) got a load of worms from me for the nestlings. On her return she had another bath, prowled around in the upper court and then went to investigate the roof of the tool house. The camera may not be the cause of her present timidity in its immediate vicinity, but she is a different bird away from it.

(Took another bird out of the skylight--this time a young spotted towhee- the one before was an adult Brown towhee).

About 5 P.M. while engaged with a visitor, Brownie appeared at the oval lawn and did not hesitate to run out on to the road to jump up into my hand. Clearly the fear of the camera has not extended to me.

For the first time yesterday one of the nestlings made a sort of little squeal when I touched him. This is the loudest sound to date. 11 to 12 days

May 28th. Visited the nest at 7 A.M. Not an adult in sight, the young having a good snooze. One of them "squealed" again when I touched him and immediately subsided. None of them shrank from me, but started their fairy chorus which is almost inaudible, and which, when heard for the first time, is not suspected of issuing from the nest under observation. There is nothing harsh about it; on the contrary it is soft and pleasing, though high-pitched. Later one of them squealed at one of its parents when stepped on too hard. (Although squeal is not the proper word).

9:00 Have been trying unfruitfully for about an hour to get Brownie within the field of the camera anyplace; but she will only sneek in behind. I then moved about ten feet outside the field of view, leaving the camera where it was and she took worms from my fingers almost at once. I did not want to let her have many as I intended to go back to the chair and see if she would not come for the rest of the worms needed for that particular feeding period, so covered the box with my hand. She did not agree with my plans,

however, and with no invitation, forced my fingers apart with her bill (without very much resistance on my part) and got what she wanted, then off foraging. which was 8 or 10, and gave them all to one nestling. It may be that the food supply is apportioned largely by feeding the young in more or less regular turns on successive ~~vi~~ trips, but so far, when an adult arrives with a load, even when it consists of a large number of worms, the entire quantity has been invariably all given to one chick. To date also, the food supply, except as furnished by me, has been overwhelmingly Jerusalem crickets. Julio says he has positively seen one centipede fed, and he knows what they are, for I have shown them to him often when working in the garden and have given him their English names. Later

Yesterday Greenie produced a new call while under the nest tree trying to decide upon which branch to start his climb to the nest. I t was many time repeated and was reminiscent of the Western Kingbird, not however, of its shriller cries. +

10:30. I have a good joke on Brown-eyes. While looking at the young birds, as the parents were away, Brownie came up with one of the two angle worms which I have seen fed to the nestlings. She chuckled to them, but none would pay the slightest attention to her, or even move. She sat there overhanging them " with a benevolent expression on her face" if the liberty may be taken, and the worm dangling from both sides of her bill. At last one of the youngsters opened its eyes, saw me--I suppose- -for it stretched out its head towards me and not towards its mother, opened its mouth, whereupon I slipped in some moistened soft food on the end of a rounded an polished piece of wood prepared for this purpose, and the chick promptly "slipped itself over it" with a forward lunge. Brownie, who was standing partly over this chick, viewed the whole operation complacently and even bent down and gently picked off the particles of food adhering to the young

bird's bill after I had given it a second small helping, and its mother having given it the worm between acts. I felt quite triumphant at having beaten the mother bird to it and imitated her chuckle as best I could. She immediately cocked her head to one side and looked at me with what it pleases me to call surprise and interest. This is the first time, while on the nest, that either adult bird has ungrudgingly acknowledged that my attempts at imitation may not, after all, be wholly beneath the notice of experts. Meanwhile, as long as companionship entails no obligation to face the lens, I am conceded to be reasonably worthy of confidence. Anyhow my grub is good.

(It is odd that Brownie faced my kodak at 2 feet 6 inches from the lens, long ago, without a qualm).

1:15 Just as Brownie was getting used to the camera and its sound, she came into good position, not very nervous, and I thought I had a good shot of her, but the spring had run down! Again she overcame her fear and stood looking into the worm box in my hand while the film was running, but on looking at the camera, I saw that the hat which I had on it to keep off the sun had been moved by the revolving key of the clock-work and pushed down over the lens!! As a movie camera man I am a first class engineer. However, I think she will come back to normal before long, in front of the camera. One day and a half so far to get about forty feet of film, very probably none of it any good.

About 4 o'clock Brownie began to get the camera associated in her mind with food--I suppose--as she put on some fair performances before it. Not altogether at ease and darting away quickly, but if I am lucky I may have some film. When the both of us get used to the camera, this being a joint maiden effort--neither of us having even had a book of instructions to read, we should get something interesting.

In the glade from 7 to 7:30. The purple finches singing continuously--also continually--during that time. Both birds giving a final charge to the brood to which I added worms. Brownie gave them some soft food a little earlier. They are getting pretty big and are noticing things, stretching and preening. One of them pecked its mother on the breast to attract her attention to its need for food.

Brownie had a spider for them and Greenie unearthed another of those huge creatures over which thay had a pulling match the other night. (I wonder if it could be a slug--but doubt it). This resulted in another chase, but Green-eyes carried it up to the nest while I was on the ground, so it remains unidentified. A few more angle worms today, but still overwhelmingly Jerusalem crickets.

May 29th. I was busy most of the day in San Francisco. On my return I set up the movie camera 6 feet from the chair, with no film in it, in plain sight and in full sun to let Brown-eyes overcome her fear of its forbidding appearance and its noise. She behaved very well, finally becoming quite at ease while I started and stopped it frequently. I think she is now practically cured . At about 5:P.M., Julio said that the "Frasher" had been looking for me at the work shop, so I prepared some soft food and went to the nest. Green-eyes was on it alone, but Brown-eyes immediately flew into it from some place (an unusual performance), came at once to the nest, climbed all over Green-eyes and with one foot on his neck and another on his rump faced me 18 inches from the end of my nose, Greenie being back to me, the nest full of strapping big youngsters and the twigs overhead interlacing over it making it difficult for the adults to manoeuvre. However, when he saw the spoon of soft food, with a tremendous upheaval, Greenie faced me too with one foot on the back of the nest and the other having turned one youngster's wing wrong side too on top of its own head, now stood on this wing and jammed the head hard into the nest lining. The youngster squealed and I took hold of Greenie's foot and moved it away.

Both adults at once fell to eating hungrily from the spoon, but neatly picking up all crumbs wherever they lodged. Greenie has not altogether abandoned the idea that I should feed him like a young bird occasionally as he still opens his bill to me at times like this and likes to have me put food in it. This rather strengthens me in the original impression that he is a young bird. While the adults were eating the young were quite for a long time, but they began begging for food in the end and the parents fed them well on soft food, but not stuffing them. Once when Green-eyes' head interfered with Brown-eyes efforts to feed a certain chick, she tapped him on top of it and he moved it to one side and held it there, although the position was uncomfortable for him. Quarters are very much cramped by the twigs and small branches. During this period B.E.'s tail was forced straight up intp the air and held there by a branch and her mate's was similarly held horizontally at right angles to his body. I next offered worms and both parents went over the feeding operation again, Greenie frequently getting worms from Brownie instead of from me. The last worm was taken by Brown-eyes who gave it to Green-eyes who was holding his open bill straight up into the air. When he took it he remained perfectly motionless, bill still in air, facing his mate. Their breasts were touching. Brown-eyes began to get sleepy, as her eyes began to get dull and closed slowly. She rested her bill on Greenie's and took a little nap. As I left Greenie had not changed his position at all, though his mate had shifted slightly and had her eyes open. I did no timing, therefore it is merely a guess that Greenie held his head (with the worm in his beak) immoveable for three minutes while I watched--- how much longer after I left I do not know. I should like to know the reason for this action. It must have been fully a minute before Brownie used him as a bill-rest, so I do not think it was offered as a rest.

It is fascinating to watch at such close range two birds like these acting perfectly naturally, and fully at ease and perfectly free. Their conscious acts are very gentle, although they do not mind stepping on each other and their young without looking to see where they put their feet. The young squeal at them if they are too much put out, but they endure almost any amount of physical discomfort unintentionally imposed upon each other for surprisingly long periods, i.e., say, half a minute, without protest or struggle. I suppose birds, technically, have no faces and therefore, no although facial expressions. However I know of nothing more wooden looking than the expression these birds can assume at the nest when they "feel that way", and they can look positively benevolent, intelligent, interested, curious etc.

About 7 I made a round of the garden, passing by the thrasher nest, noting that the birds must be outforaging and were not in sight anywhere. I entered the small walled yard of my shop, wondering if Brown-eyes had gone there to look for me. As I was about to enter the shop, there was a rustling in a small oak overhanging the wall and Brown-eyes, whom I had not called in any way, peered out at me through the leaves and as I was passing the empty cage in which we had confined Mr. Brock's orioles for about a week before liberating them, she dropped down upon it to get worms from me. These she took to the nest. I went into the shop and sat down in a chair placed abut ten feet inside the door and awaited events. Soon she appeared sitting on the door, which opens outwards, peering in at me under the Boston ivy (Ampelopsis Veitchii) which frames the doorway, then coming into the shop, jumping up into my hand and taking another lot of worms. About 7:30 I was cutting off old roses in another part of the grounds entirely, when I heard her call nearby, and there she was in the road

coming for another supply, but letting me know in advance. She made three trips this time. The call on this occasion was the one which I have termed the "blue-bird call", not that I think it an imitation of it, but that it more nearly resembles that call than any other of which I can think. It is most frequently heard from a bird that is either building a nest and is about to take material to it, or has a nest of eggs and is going to relieve its mate on them, or has young and is going to take them food. This is not, of course, invariably the case, but it does seem that it is definitely a signal to make its presence known to more or less specific individuals within a limited area, for it is soft and low and cannot be heard far.

May 30th. At 8 A.M. I went directly to the nest, the parents were away foraging. The young bird in front squealed (although it is not really a squeal--I can not describe it) then opened its mouth for food, which it took readily enough. They are getting curious about the outside world and while they sleep most of the time, they occasionally stretch their wings and legs and preen. Green-eyes returned first, but his mate entered the nest first, each had a very large spider--some sort of a ground spider, I think. Both birds were eager for the soft food, eating from the spoon contentedly, giving but little to the young ones however. When I left they were both sitting quietly on the rim of the nest, doing nothing, but relaxed and obviously free of care for the time being. The eyes of the young birds are all of the same very dark hue, probably it would be called black. Their bills are but slightly curved. The curve is uniform and there is no sign of a hook as first noted. That notation was in error. Their feathers are growing rapidly. At present they seem to have wing bars of a lighter color than the flight feathers, but this is due to the fact that the shafts of the feathers are bare for a considerable distance and the webs appear only out towards the ends. Their bills are about one third

as long as their parents'.

At 11:30 , while I was sitting in the chair in the glade, Brownie jumped up on to my hand and gathered up a batch of worms for the nestlings. I got 2 feet of film. ( 1" lens, f3.5. Stop f8. Brilliant sun. Background of sage. Distance, 9 ft.)

At 12:00I got 4 feet more; conditions the same.

The nest , due to insufficient support, has as feared, sagged alarmingly to one side, thresting to collapse and drop. Also forcing the young all to one side where they crowd over the edge in danger of falling out prematurely. While Brownie was in the nest I undertook a foundation job and now everything is level and firm. It is surprising how much more room is now available.

1:30. From 1.00 to 1:20 Brownie did her best to cooperate fully. She had just had a bath and was sunning herself out by the berry patch when she saw me go into the glade. Besides taking worms from my hand( jumping up from the ground in full view of the camera) she did a magnificent sun-fit for a minute or more, which, unfortunately I was unable to get as a tuft of sage was in the way and I could not move the camera in time. She paid not the slightest attention to the camera and wanted to hang around me digging and preening, but I could not manage the camera and steer her into the exact spot at the same time. As it was, the remote control ~~XXXXXXXXXXXXXXXXXXXX~~ stuck at times when she was out of the field and I must have a lot of still life (unless there is a black smear on it which would represent me rushing to stop the thing).

With the same f 8 stop and full sun I got (neglecting blanks, etc) 42 feet of Brownie, mostly on the ground, where I was myself, having left the chair. Unfortunately most of the background is about the same color as she, viz: brown, consisting of an accumulation of oak bark from dead limbs of the old oak.

1:45 Got Brownie sitting on the kitchen scales. The remote control apparatus again stuck and the camera reeled off the difference between 65 and 48 feet before I could wrench the thing off. I do not know how much was good.

May 31 As I stepped out of the door at 7:30 A.M. Brownie saw me almost at once and called :"Too-wheet-you-wheeet,wheet." I paid no attention to her and walked toward the shop. She again called in the same way, watching me from about 100 feet off. I ignored her and went into the shop by a devious route and began mixing food. Soon she was sitting on the door looking in, but did not want to fly down, so disappeared over the wall and walked in through the gate. She wanted no food for herself, but for the nestlings as she refused soft food and carried worms away. In a short time she was back again.

Age of nestlings These notes show that the complete brood of 3 was first seen in its entirety on the 18th., therefore we know that the youngest bird is not less than 13 days old now. However, it is reasonably certain that the last one was hatched no later than the 17th.(See notes). This would make the youngest 14 days old, so that if they were hatched on successive days, which there is little reason to doubt, their ages at today noon are 14, 15 and 16 days, respectively. Mrs. Wheelock gives 12 to 14 days as the period during which the young occupy the nest. Judging by the appearance and actions of the family under observation, I would say that a fright might send these little fellows off now, although they cannot (or will not) swallow anything unless it is put well down their gullets at present. They will occasionally, however, peck in an indifferent sort of way at food I offer them. They are very quiet nestlings, aside from a squeal now and then when disturbed, they make no sound except that faint faraway chorus when food is offered by the parents, and even on such occasions they are

often silent.

1:35 P.M. About 11:00. my sister, Mr. W.F.Sampson and I went to the glade, at which time neither of the adults was in sight. My sister and I went up to the nest first and Brownie promptly appeared from somewhere and climbed into the nest, assuming the wooden Indian pose, where she becomes rigid and all in one piece, refusing even to wink and not looking very pleasant. When my sister climbed down, Brownie immediately "loosened up" eating anything I offered. This was repeated with one or the other of my visitors often enough to show that she objected to so many people about. Finally Greenie joined the party, bringing a large Jerusalem cricket. From past observation, I was quite certain that this would inject some life into the proceedings, which it did, but on my sister's approach, then the spectacle that presented itself consisted of five stiffly frozen birds glaring with wooden belligerency.(Passive hostility). We decided to out-wait them and before long both adults were taking food from me and feeding the young freely. Green-eyes got the last worm and, for some reason, froze. He would do nothing with it, but hold it in his beak, so I reached out and pulled it away from him, without his moving a feather or winking, although he looked pretty glum. During this feeding period, I called my sister's attention to the fairy chorus, which she said she would not have noticed otherwise. To us both it sounded as if coming from far away and was accompanied by no movement indicative of its source. Thus it appears that the ventriloquial habit of these birds (recorded of the adults previously in these notes), is an inherited characteristic and not acquired.

About a half hour ago I again went up to the nest, Brownie being in the glade, but seeing where I was headed, also climbed up. She was, figuratively, all smiles, eager to eat anything. The nestlings also regarded me with favor and stretched out their heads to receive the soft food offered them on my wooden "spoon", eagerly

impaling themselves on it with sturdy lunges. My only difficulty, this time, was that Brownie often grabbed the food first, delivering it however, to the same objectives aimed at by me, so that for a while we were both feeding the young at the same time. I am very curious to see what will happen when, and after, the young leave the nest.

3:35 About 3:00 I wished to get some shots at Brownie on the oval lawn with a 4" telephoto lens, set up the camera and marked a point 15 feet away for the subject, who was not there. The plan was for me to go and get her and then have Julio, whom she knows, place her on the spot marked. (4" Wollensack lens, F4.5, with F6.3 stop, full sun) I found Brownie near the berry patch about 200 feet away, tossed her a worm and then, by whistling and calling, induced her to follow me to the oval lawn, where I made no further overtures and Julio furnished the inducements. This was naturally confusing to the bird, as she persisted in coming to me at the camera and could not understand why I seemed to be no longer interested in her. However, Julio got her approximately "on the spot" and I got--I hope --perhaps a foot. (Note: Just before this I got 4 feet, 64½ to 68½ with the 1") Index stands now at 69½.

June 1st. Brownie made several trips to me at the oval lawn about 8:30 to get worms. About 9:15 she was singing a few snatches from the top of the old oak, but soon came down for more worms, taking them all to the nest. I followed and found her very hungry herself. Greenie joined before long, announcing his approach by a series of "scrips" which immediately aroused interest in the youngsters, who surged up so powerfully that Brownie had to do some fancy stepping about to keep from being pushed out of the picture. Greenie took so long to select the exact route through the branches that everybody lost interest in his movements, despite his continued scripping, and the youngsters settled down for a nap. However, he finally arrived

with a Jerusalem cricket and, after delivering his cargo, joined in eating soft food from the spoon which I held out. He was extremely hungry also, so that the two adults ate all of my local supply themselves. The young, meanwhile, were not much interested in their parents' doings, beyond an occasional peck at the hairs at the corners of their mouths and once or twice using their elders' feathers as pen-wipers. They are well feathered out in exactly the same shades as their parents. Their eyes are dark and luminous. (This sounds like a bull) The down floating above the head feathers is darker in tone than the feathers and has a bluish tinge by contrast. Their legs are big and powerful. Their bills are showing more curvature but it is uniform with no tendency to hook at the end. Their tails are only about an inch long. They are so strong that if one of them decides to stand up and stretch, the whole mass of 5 birds heaves up in the middle until he pushes through. Their "squeal" is developing into the "haih" call of their parents and their fairy chorus is more distinct and very slightly coarsened. They preen quite a bit and show a tendency to tuck their heads under their wings when they sleep, also they occasionally reach out to me for food and if , with their assistance, I am not able to get it down their gullets far enough , at least one of them is able to swallow it.

While sitting at the steps near the oval lawn about noon waiting for a rabbit to show himself again amongst the plants he has been destroying, there was a patter of feet and Brownie came to look me over. She tried several vantage points to get a view of what I might have in my lap and made several ludicrously inadequate attempts to fly up on me someplace, then mustering all her resolution, landed on my upper arm and walked down to my hand, where she found the worms she was looking for. About 2:00 I followed her up to the nest where she had just taken two angle-worms. Greenie was there ahead of

her. She permitted me to disentangle her tail from some twigs by taking hold of it and moving it to one side and neither objected to my clearing away a few twigs which have interfered with them while in the nest. Neither froze and both watched my operations with interest. They both ate heartily of soft food and acted without restarint of any kind. Brownie got a piece of soft food in one eye which bothered her badly so that she finally kept it partly closed. When I reached forward to try and remove it, she cringed slightly and opened her beak, so I waited a moment and tried again with my wooden "spoon". This time she did not cringe and permitted me to scrape off the offending particle from the delicate eyeball, holding perfectly still during the operation, but not freezing. As soon as this was finished, to her evident relief, she resumed eating the food offered in the ~~real~~ tin spoon and so did her mate. This, I think, is the greatest exhibition of confidence to date. As a matter of fact I did not think any bird, wild or tame, caged or free, would permit a thing like this to be done without being held firmly, certainly by one person and, more probably, by two. The average human being will flinch under similar conditions, but this free, wild bird, except for the initial cringe, held perfectly still and permitted a wooden stick ~~xkxxk~~ to be scraped across its eyeball several times in succession! Believe it or not!

Brownie gets food in eye.

Permits me to remove it; an extraordinary display of confidence.

4:45 Got 1½ ft. (73½ to 75) of film. Brownie on my hand near oval lawn. Light not strong as sun getting low. (4" lens, using stop f 5.6) Dis. 9'6".) The young had been well fed just before and Brownie was not anxious to get food for them. About 5.00 she took up nearly the whole of the nest, crowding Greenie and the youngsters out toward the rim, the former hanging on by whatever he could, looking glum. The object in view appeared to be a nap, as she puffed herself out and closed her eyes.

(Three more bird's nests found today, mostly [illegible]. One of them in a camellia was a Brown Towhee's, the fifth this year. The [illegible] others about 15 feet in oaks were not identified. Wren-tits building more (?) their second nest, also purple finches and Lawrence finches are building.

June 2nd. At 7:30 A.M. I went directly to the nest with warm moistened soft food, hoping to find both adults away foraging, so I could find out the reaction of the young toward me as a food provider in the absence of their parents. Neither parent was there and as the youngsters saw me they nearly jumped out of their skins in efforts to get food, opening their mouths wide and singing the fairy [illegible]. I thought I had a liberal supply of food, but they ate it up in no time, fitting themselves neatly over my wooden spoon. Brownie soon arrived with two crickets, but as soon as these were disposed of, the babies turned to me again, Brownie now and then intercepting a "spoonful" for herself and keeping the crumbs neatly picked up from the nest and off of the feathers of the nestlings. There was no stiffness or fear anywhere about the nest. Brownie was evidently happy to have me do the feeding; at times, when not picking up the food dropped--for it is not easy thing to balance porridge on the end of a narrow stick and deliver it accurately to one of three young birds all of whom are reaching for it--she would sit and watch with an air of happiness and contentment. I am sure she liked the whole performance. The small birds, while preferring that the food be rammed down their throats--they furnishing the motive power--are now able to swallow food fairly well when it is not put down quite far enough. Green-eyes was not present at the foregoing festivities. Both adults sang a little this morning, so things are progressing satisfactorily. It is quite evident that the young birds have now reached a stage in their physical development and attitude towards me where they could be readily tamed if put under restraint. If allowed to wander about following their parents for

food, the task would be more difficult, as the parents feed them preferably on insects and the local supply is limited, thus necessitating the parents' searching far afield. In the natural course, therefore, the young will follow them and perhaps not return. Moreover, it seems probable that the parents will eventually drive them off anyway to protect their own territorial rights, even if I should put them under temporary restraint and then release them.

As I passed the glade at 12 M. Bownie was just going to the nest with angle-worms and stepped over what appeared to be a snake. Stealing up quietly, I found it to be an ~~snake-lizard~~ Alligator lizard about 14 inches long. Neither creature appeared to notice the other.

At 1:20 the youngsters were sound asleep with Brownie watching over them peacefully. She was friendly, but wanted no food and I did not wake up the babies. Green-eyes was digging nearby, not very earnestly, as he frequently stopped and did nothing. I set up the movie camera (Slightly hazy, stop f5.6 Dis. 8'8", 4" telephoto) and centered it on the arm of my chair. Brownie came down about 1:25 and came immediately to the foot of my chair, but wanted no food for the time being. Until 2:15, except for two or three excursions to the nest of a minute or less duration, she was never once more than 6 feet from my chair. As she played about my feet she listened at a point about four feet away, like a robin, and then began digging furiously, throwing portions of the loose earth about three feet away from her. She dug a trench about 16 inches long, from three to 6 inches wide and deep enough so that at places her back was level with the surface of the ground. Occasionally she would back out and throw the waste heap further away and trim the banks where they were caving. She threw out bits of bark and small stone with side flicks of her bill. Most of her strokes were in one directionyis:

right to left. Near the end she began to sink a shaft and from it drew out a large spider. This she killed and took to the nest, but she did not trim off any of its appendages. She returned immediately, preened and played about and "did" one very fine "sun-fit" which I would much have liked to film, but everything was all set and measured for this to get a picture of her eating out of my hand on the arm of the chair. After sunning she sat quietly for a time by my feet, doing nothing.(I really thinks she likes company when there are no pressing duties to be performed). Getting tired of this she began to glance sidewise up at me and tried two or three of her ridiculous, short, vertical flights to land on my knee, falling short each time. Finally, with a great burst of energy, she accomplished the feat of jumping and flying fully two feet upward, landing on my hand. I have learned that, if allowed unrestricted access to the box, she will get a beak full in no time, take them to the ground and prepare them and then to the nest. This puts her out of the field of view with a 4" lens very quickly, so this time I partly covered the box with my hand to keep her in view longer. In this picture she will disappear from time to time, but in most cases not going directly to the nest, but to the ground at my feet, to prepare the worms. This time I got 21 feet of film. Toward the end it will be seen that she eats a few herself. All the others were given to the nestlings. These, it now appears are 16, 17 and 18 days old and still in the nest. They are rapidly losing their down. After taking the film I went to the nest. Young all asleep and Brownie,never having heard of me before, much less having seen me, was as receptive as a wooden Indian, consequently I departed, to make these notes. It is odd that Brownie's decision to stay on the nest for a while should so often coincide with her taking of the last worm in my box.

Set up camera with same lens and stop, 9'8" at terra cotta saucer of water. Used from 96' to the end trying to get Brownie in the bath and both Brownie and Greenie picking up worms at it, with Greenie begging her for some.

5;00 P.M. A few minutes ago I visited the nest, both parents being away. The occupants immediately asked for food and as I was giving it to them, Brownie arrived calmly and watched for a time. She then settled down amongst them so that there were four heads in line and their backs were all about on the same level blending in together so that it made one fluffy mass with four bills sticking out from it. This was new. I assumed that Brownie had deliberately turned over the feeding operation to me and wanted to take her turn with the youngsters, so included her in the next round, she being quite agreeable. I then started another round and when it came Brownie's turn she seized the wooden "spoon" and tried to throw it away with the regulation thrasher side-throw and would have done so if I had not had a good hold of it. She had every appearance of being angry. I offered her the tin spoon and she bit it. I then presented my finger and she did nothing about it. Then I placed the bowl of the tin spoon where she could reach its contents readily and in about a quarter of a minute she was eating out of it happily. The foregoing are the facts. I do not know what the underlying motives were; but when she settled down amongst the young instead of upon them, it was immediately after they had been heaving her up into the air by standing up and I noticed that when two of them stood up again when she occupied the new position she hooked her bill over their backs in turn and pulled them down into the nest again. She could not have done this if she had been over them. I think, therefore, the new position was occupied for the purpose of better control of the, now, ambitious youngsters, instead of for the purpose of joining the bread-line. When she tried to throw away my wooden spoon, I believe it was because in her opinion, the youngsters

should be given no more food at the time. When she bit the tin spoon, she was still angry, but when she did not bite my finger it was because she was not angry enough. When she turned to eating the food herself it seemes to me that it showed, not only that her annoyance with me had passed, but that it was, in the first place, directed only at the act of (presumably) overfeeding the young. These are, of course, all guesses, and undoubtedly any competent biologist can easily prove that I am ascribing motives, passions and reasoning power to these birds entirely beyond the capacity of their feeble brains, and that they are mere automata acting solely through the residue of the momentum imparted to them when life was first kicked into them by a chance grouping of electrons, protons, neutrons, positrons and photons.

June 3rd About 7:30 A.M. I went to the nest, finding the adults absent. The young are so big and dignified looking that I thought at first, that one of them which was sitting higher than the rest, was Brownie. They did not flinch or show fear, so I gave each of them a lump of soft, warm food about the size of a rather large pea and then repeated the dose a few moments later. They were extremely well behaved , no squealing or scrambling. I left before either of the parents returned. These little fellows are now broken in on artificial food, show no fear of me and recognize me as a source of food. Altogether they are such attractive youngsters, especially as regards future potentialities, that it is a great temptation to put them in an aviary and make pets of them.

About 9 Green-eyes was practicing his music in the old oak overhead. Brown-eyes did not appear for some time and then carried something to the nest. I went up and offered her food in the spoon which she ate freely. I then handed her one worm at a time which she distributed about equally amongst the nestlings although one was

due to its unfavorable location in the nest at the time, I think, was slighted somewhat. This one I offerd soft food on the wooden spoon which it swallowed hungrily, Brownie inspecting the operation by looking directly down into its mouth with her eye almost touching its bill. She then touched it in various places with her bill as if to see if everything was all right, but really, I think, to look for crumbs. The others stretched out their necks to me, but I gave them nothing, because Brownie did not seem to want more worms for them. She then settled herself comfortably with a soft, peaceful expression and I left. (I am wondering if the ease with which these birds are getting their food supply has a tendency to cause the young to remain in the nest longer than customary, for they have occupied it now for 17, 18 and 19 days respectively +

10:45 The thrashers have been doing quite a lot of singing this morning. I think principally Green-eyes. They are also wandering about the place at points where I have seldom seen them. I would not be surprised if they built again.

( The robins are now building their second nest. It is in the same pine
( tree as the nests of the linnet, the purple finch and the Lawrence
( goldfinch. They are still feeding the first brood). +

At 10:55 there were only two of the young ones in the nest. I fed them and Brownie came and took her share of the food. She was not at all perturbed by the absence of the third bird. (I wonder if this is what all the singing was about?) There were no signs of the young thrasher about, although I made no search. I went and sat in the chair and Green-eyes sang a little behind me, the sound appearing to come from the ground and very nearby in the dense undergrowth. Brownie came down from the nest at about 11, walked by me and into the bushes. There was some talking, and then snatches of song. In about 20 minutes Brownie came out looking for food and took two worms from me into the bushes. On her return farmore the worms were gone. She took in

three more. On her next two trips she went up to the nest, Greenie, in the meantime having taken a cricket into the bushes. During this time the Wren-tits were bringing raspberries down from the berry patch and giving them to their young. Quail were heard to enter the bushes where the young thrasher, very evidently was. Brownie went in; there was a scuffle and one quail flew out in a hurry. There were sounds of another scuffle mixed with quail squawks, a great tearing through the bushes and out shot another quail running for dear life and yelling, with a thrasher on, about, around and top of him pecking earnestly. I never knew the thrashers were so fast. This was no play affair. When the quail was well on its way, the thrasher came back to me immediately and got more worms. Brownie, of course. No doubt of where that young thrasher is! Nineteen days in the nest, if it was the first one hatched.

June 4th At 6:50 A.M. the nest was entirely empty. Greenie was singing at intervals from the old oak, the "Pit-yourki" motive beginning most of his efforts. Brownie was in the road but came for food promptly. She then went up into the tree and both birds sang at the same time. No doubt now as to which sings. Both used exactly the same, recognizable phrases throughout. + One of the young thrashers was sitting placidly in a sage brush and Brownie started a series of excursions back and forth between us carrying worms. I finally, by stopping the worm supply temporarily, got her to take him soft food, but she does not care much about doing this as she can carry only a very small amount at a time and insects are, naturally, preferred.

8:30 The plan of the thrashers, at present, is for one to stand guard in the top of the old oak while the other feeds the young. About 8 I went to the glade and one of the young was up in a baccharis bush about six feet above the ground. Brownie came to [illegible] for worms, but took time to [illegible]

+) [illegible]

giving no attention to the one in plain sight, Greenie meanwhile calling at intervals from the lookout post. Neither adult seems concerned about my movements, but Brownie is plainly puzzled by the necessity for keeping track of her young and finding food and showing it. I had hoped that she would bring the youngsters to me for food and, indirectly that has already occurred. The one in the bush came down and followed her on one of her trips to me. I offered him soft food on the wooden spoon, which he swallowed greedily, Brownie watching the operation without concern. I did not touch him. A minute or two afterwards he climbed up into another bush about three feet away and his mother carried food to some of the others that were out of sight. I went and picked him out of the bush without any protest from him at all and gave him some more food. I sat down on the bank with him held loosely in my hand, so that he could get away if he wanted to, as I wished to see how his mother would take it on her return. She however, was away so long that he finally got restless and wobbled off on his long legs in the direction she had taken. The young now have a single call note. I doubt if they can fly, but think it probable that their wings will aid them in an attempted downward pitch from a high point.

10:00 Brownie does her best to feed the young soft food, but as it is crumbly, some of it invariably falls from her bill before she has gone more than a foot or two. She then tries to recover it and more falls out. This is usually repeated until all of it is scattered. She then abandons the attempt, picks it all up again, eating it herself as fast as it is recovered. If enough is left in her bill to make it worth while to carry it to the youngster, on her return trip she generally gathers up and eats the scattered particles.

I have not seen all of the young, in fact no more than two at as far as I know a time, and these widely separated, Green-eyes taking care of the more distant one.

About 4:00 this one was up about ten feet in an oak. I got a ladder and offered him soft food, which he took. I then took him in my hand, as I wished to see how the parents would react. He "snarled", that is the closest description I can give of his protest, but he ate more food just the same. The parents came to the tree at once, but did not seem greatly perturbed. I released him in a minute or two and he up into the branches of a small pine. In a few minutes Brownie was coming for more worms.

June 5th. At 7:15 Brownie came to me in the glade and made several conscientious efforts to carry soft food to one of her family somewhere out of sight. I then gave her worms and the youngster was revealed 10 feet up in an oak. He gradually worked down lower and , although he snarled at me, he took soft food from the wooden ~~muddle~~ spoon. There were no signs of the others, nor was Green-eyes in sight or hearing.

I have added just enough suet to the soft food so that it can be rolled into pills and not break if handled ~~very~~ gently. This works fairly well unless a small piece should break off, then , in an effort to recover the piece, the pill is crushed by the bird's beak and scattered. I spent an hour in the glade beginning at 3 O'clock, Brown-eyes being with me all of the time, feeding but one bird. This was a very easy job, so she rested most of the time close to my feet, giving me a good opportunity to observe new behavior. She took a succession of naps while standing on one leg, then puffed up her feathers, sat down on the ground and napped some more. She sang, while in this position, her long undersong, full of variations, with eyes closed most of the time--a new behavior. This is the first time I have heard her undersong for weeks. After this she played about me with various loose objects, such as an acorn and old cartridge case, then up into th old oak to look over the country and sing a little and finally the most vigorous digging enterprise I have seen her undertake to date. This was in a bank sloping about 45 degrees. The material removed was a nearly black

leaf mold with some much harder earth. Due to contrast in color the extent of the excavation was readily measured. The face of the cut was about 7 inches high and 21 inches long. This face was undercut in places, penetrating the harder earth 4 inches, making a little cave. The material excavated formed a semicircular bench, level on top (as this was the working platform) about 11 inches wide and 24 inches long and spread out into a half frustum of a cone. The base of this, approximating a semicircle in outline, measured 27 inches by 58 inches. The time required ( by guess)was about 10 minutes.

A wren-tit examined the earth as it was being thrown out by the thrasher

About 4, as I had not for a certainty seen Green-eyes today, and only the young one that Brownie was feeding, I looked him up. I knew about where one of the young ones was, as I could hear him near the berry patch. Also I had not succeeded in locating the third bird since they all left the nest and had not heard him. I found the one that was calling, up in a small oak and Greenie was about 40 feet away in a pyracantha near the fence. I tossed him some worms, which he took up into the pyracantha. He then took worms up to the one that was calling, so I investigated the pyracantha and found the third one. That accounted for the all for the first time. This last one I fed with soft food and he showed no fear. I then took him in my hand and he made quite a noise for a few seconds and struggled, but was glad enough to eat more soft food and climbed up on to my shoulder. Greenie came to see what it was all about, but was not much worried, as he found time to scratch himself and straighten out a few feathers. I took this youngster down to the glade to see what Brownie would think about it. She came and looked at him from a distance of about 18 inches and was not at all worried. I then let him go, and he ran to her, but she drew back, opened her bill and made harsh noises at him. I wondered then if he had been definitely assigned to Greenie and if she would reject him; but when I held worms out to her she began to feed him at once. He then climbed up into a sage brush and all was peaceful.

Greenie had been taking care of the two birds and Brownie one. None of these youngsters can fly , although their wings are of assistance in descending from a high point. They are very good climbers, and going up ten feet in an oak or pine is not difficult for them if there are plenty of small branches.

At 6:00 all three young, judging by their soft calls, are in the glade. Brownie is feeding them all at present. One of them was where I could reach him easily, about five feet from the ground in a baccharis, and on seeing me close to him, stretched out toward me and I gave him some food. It has not yet been necessary to hold any of them to induce them to take food and they take it silently, do not beg for it audibly and do not quiver their wings. Their droppings are no longer enclosed in a sheath.

(This is to be inserted in play episode on page 194, as it was omitted. A She also picked up a large twig twice and dropped it again, one of the times, looking up into the tree where nest No.1 was built. A few moments after she became much interested in something at the foot of a sage brush about six feet away. Whatever it was, was considered to involve some danger, as she would approach it cautiously and then retreat repeatedly. At last she pecked something, retreated quickly with a little sqeak, shaking her head, bit pieces of earth from the corner of a soft clod, swept her open beak through the soft earth filling it with earth, knocked it all out again, made tasting movements and in every way acted the part of one who wanted to get rid of a bad taste. Finally she wiped off her beak well on surrounding objects. I was unable to find what the offensive object was).

June 6th. At 6:20 A.M. a thrasher was singing on the roof of the house. At 7:20 Brownie came out of the brushy part of the glade and took two or three helpings of worms to one of the young ones and then loafed. It would seem that the others were not there and that

it is Greenie's job to take care of two.

At 8:35 Greenie was giving quite a long concert from the top of the old oak. When I found Brownie was in the berry patch and was feeding a young thrasher in a bush there, seemingly having changed places with Greenie, it cast doubts on the guess made in the preceding paragraph. However, Brownie soon began eating herself, without looking for another youngster, and I decided to investigate. First, however, I approached the youngster in the bush with some food on the wooden spatula. He greeted me with a "haih" but reached for the food. On the second helping he swallowed the stick so far that he got it away from me and I had to take hold of it again and pull it out.

Going down to the glade, I found Greenie in charge of the two babies there and gave him worms, which he fed them. So maybe it is his job to look out for two, after all. One of the young birds now in the glade is very lively and runs about on the ground quite a lot. The others stay quiet in the bushes and trees.

( The place now fairly crawls with young of the robins, linnets, purple (finches, green back and Lawrence goldfinches, wren-tits, bush-tits, (plain titmice, spotted and brown towhees, wrens, thrashers (The purple finches and Lawrence goldfinches are building more nests, (and the Chipping sparrow is carrying food.(Nest not located)

At 9:20 I went to have a look at Greenie's doings on the extreme south-western edge of the glade. I gave him worms which he took up about ten feet in an oak and fed to a young thrasher. With a little persuasion he was making regular trips, taking worms from my hand and the box just like Brownie. Soon Brownie joined and fed another youngster in the glade. This was not the same one fed at the berry patch, for I went there and found him still there. Therefore, the young are not definitely apportioned off between the two adults after

they leave the nest, although it appears as if Greenie attends to more of them .

(Dr. Reynolds says there is a nest of young California jays next door to him. That would be about 250 yards from here and that within the past few days he has seen California Jays robbing a Brown towhees nest).

A t 11 o'clock all the young were easily located. Greenie is finding that he can relieve the strain a lot by coming to me and not being so standoffish. This time when he saw me, he began "scripping" at once, ran to me quickly and jumped up on to my hand, taking worms from the box just like his mate, except that he scripped all the time. I hope to be able to get both of these birds on my hand at the same time and get a movie of them, but do not know if it will be possible. I hope also that the young ones will eventually come to me and, naturally if I can get all five birds together at the same time and get a picture of them I shall be delighted.

Brownie soon learned that the side to side sweep of her bill is not always effective when used in the worm box, so now, as the box is circular, has developed a rotary, stirring motion to uncover the last worms that lurk under the bran in the angle that is formed where the bottom meets the sides. As the thrasher sidewise sweeping motion is a definitely fixed characteristic in searching for food, it seems to me that this indicates pretty fair ability to adapt herself intelligently to an entirely new set of conditions.

2;30 Have just seen Brownie eating a toadstool, apparently with great relish. I think it was the fruiting body of the oak root fungus.

7:00 P.M. Brownie is still alive and happy, so the toadstool is presumably harmless. About six I located all of the young birds, both Brownie and Greenie getting food from me to feed them. One of them that was in convenient reach, I fed with soft food. He showed no sign of fear. If they would only stay where I could reach them there would be no difficulty in taming them completely, as they are already tamer than any other free, wild fledglings I have ever seen. They

are miniatures of their parents, except that their bills and tails are too short. Their colors and markings are exactly the same. They are still, I think, unable to fly and do not even attempt it, which seems strange. All of their moving about is either on the ground or in the trees and bushes. Their average age is now 21 days. Their parents seem to have a positive dislike to flying, yet notwithstanding their small wing areas, when they do fly they do not give the impression of laborious flight and their wing beat does not impress one as being particularly rapid. Perhaps this is because, when seen flying, it is nearly always down hill and a large part of the flight consists of sailing. They can run with great speed when so inclined, but usually do not go very fast: Any bird that has no difficulty in keeping up with a quail on the ground and is able at the same time to administer a perfect whirlwind of punishment, has to be fast.

June 7th. At 7:30 A.M. both Brownie and Greenie began a series of regular trips with worms and soft food between me as a supply station and the various youngsters. When no more food was needed Green-eyes disappeared and Brown-eyes went up to the top of the old oak and sang. One of the youngsters flew about 6 feet almost horizontally from one bush to another. Another one followed one of his parents out from the bushes toward me and then went back in again before I could get a chance to see whether he would take food from me. They are more shy and more sophisticated than they were yesterday. One of them tried his hand at digging and they began to peck at things. The call note of one of them is beginning to take on another syllable. Both of the parents have been vocal today, sometimes both singing at the same time.

Roll No.4-50'. First 26' Brownie taking worms and soft food and carrying it out of the picture to the youngsters. 1" lens (to get large field) 9 to 10 ft. distance. Light variable, stop set at middle point between F5.6 and F8. From 26' to end is Greenie doing the

same. One of the young came out to be fed by Greenie, and this operation may be in the picture. Greenie sang a little undersong while in the picture. Brownie between shots of her stood for a time on one leg just out of bounds and had several cat-naps.

The "pills" made of soft food with a little suet worked well and were used freely by both parents in feeding their young. This was just as I was beginning to think that they were disgusted with them.

Roll No.5--50' Stop F 5.6. Light uncertain. First 11 ft. of Brownie in which she does some digging. Shortly after the shadows of the trees reached the drinking dish, Brownie decided to drink, but it was no use trying to get it. It is odd that Greenie, the shy one, has not been afraid of the camera from the very first, although his other affairs have demanded his presence elsewhere when I have had the camera set up, until this afternoon--except for one very short interval.

At 7:30 a young thrasher was calling from a tree where the robins were making a great disturbance preparatory to roosting for the night. This seemed to cause the parents some anxiety for they appeared in the road looking up into the tree, about fifty feet apart. As soon as they saw each other, they exchanged short and varied songs, seeming to hold a colloquy over the situation. The problem was solved by the young thrasher himself ~~by his~~ flying out of the tree across the driveway and into a patch of brake, then up into a hedge. Greenie followed him and seemed to be pushing him with his bill to induce him to get out of the hedge, which he did, climbing up into an oak, stopped calling and became motionless. Meanwhile Brownie was taking worms from me to another young one in the opposite direction and when its wants were satisfied, the two parents, who had been very talkative and musical during this time, singing frequently, retired and quiet reigned.

June 8th. At 3:00 A.M. as I opened the gate of the shop yard I was greet

a short song from the ground nearby and Brownie walked out of the ferns looking for food for the young. She soon showed me where the nearest bird was by taking food to him. After several trips this youngster flew across the road and landed at my feet where his mother was momentarily. Before I could get into action to see if he would take food from me, he went up into a tree where I could easily reach him. I got some food on the end of my spatula and approached him slowly. When the food was about a foot from his bill he edged towards me, opened his mouth wide and gulped it down without a quiver. This was repeated several times.

(Two more bird's nests this A.M. One of them a purple finch's in construction, the other not yet identified)

11:30 Two young thrashers came out of the sage 8' from my chair, Brownie making about 15 trips back and forth carrying soft food to them a little at a time. The youngsters were very lively . Both of them"did" approved sun-fits just like the adults, preened, pecked at leaves and did a little amateur digging. Unfortunately the camera was not set up. I placed it to cover the same field after the youngsters had retired . Soon Brownie came out, preened and had a sunfit, in pretty good form, but not quite so disintegrating as some of them. (12 feet of film--from 11 to 23--f8--brilliant sun but almost directly overhead). I have noticed that the young birds will sometimes run from their parents when approached by them. Shortly before 11:30 Greenie was taking worms from my hand and feeding one of the young who was on the ground near us--Dr. Reynolds being present. This is the first time Greenie has ever done this with a visitor present. Brownie was away some place and did not appear in the glade during this time.

12;30 From 23 feet to 42½, Brownie looks for a hawk, drinks and sunfits, From there to the end she feeds one of the young one-- I hope in the picture. The foregoing pictures cover only a tithe

of the sunfits, etc., etc. that she has performed this morning in front of the camera. From about 11:30 to 1:30 she has been very accommodating Just now I went to the glade to get my note book and she immediately came to me, evidently having a bad case of Hollywood fever, casting side glances at me and sidling about like a dog to see what I was going to do. In one of these circumambulations her forehead came in contact with a dried blossom stalk projecting from a sage brush and she seized it petulantly and tried to throw it from her. I offered her no food at all and there was a saucer of soft food within inches of her that she knew all about, but she would not deign to notice it. Finally, not to disappoint her entirely, I picked up this saucer and held it under her nose, whereupon she ate out of it contentedly and then walked off into the bushes. Temperament.

I neglected to note at the proper time a test which I made of Brownie on angle worms at the time when these worms were occasionally being taken to the nest. I dug up six worms and offered them to her in my hand. She was due for a trip to the nest at the time. She looked at them for a few moments, then selected the nearest one, ate it herself and hung about expectantly. I could not induce her to take any more of them, so after waiting a bit, I offered her, in turn, meal worms and soft food, both of which she took readily. The earth-worm, therefore, is ranked by these birds, far down the scale of food products. Incidentally Brownie has not yet succumbed to the toadstool she ate the other day.

At 5 o'clock the whole thrasher family was present or accounted for. The three youngsters were in the glade, well stuffed by both of their parents working in cooperation with me . The two parents were not far from the berry patch digging for themselves. During Greenie's turn at feeding in the glade he picked up and dropped several twigs and at first resented one of the youngster's making personal application to him for food by making disagreeable sounds at him ,

but when I showed him that he would not have to go out and scout for worms, but could come to me direct, Greenie then persisted in filling this particular one to repletion.

At 7:30 both of the parents were scouting about in the upper branches of the old oak and in high places, generally driving out towhees, robins and other birds that were encroaching upon the perching places of their brood. This required a good deal of "scripping", but when everything was satisfactory to the parents, quiet once more ruled in the glade.

June 9th As I was mixing food in the shop at 7:30 A.M. a thrasher was singing in the pines nearby. Soon the sound approached and I was serenaded f at close quarters by a bird that could not be seen from indoors. Investigation showed Brownie in a branch overhanging the wall, peering out from the leaves and poised for flight to the yard. On seeing me she came down for food. Going to the glade caused Greenie to come out of the bushes, followed by one of the youngsters whom he proceeded to stuff with food taken from my hand.

12:30. About 9 I located all of the young thrashers, two were in the glade and one was about six feet from the ground in a coyote bush near the berry patch. This one I fed, where he sat, with the spatula, giving him three good mouthfuls. He showed no timidity whatever, in fact such minor movements as he made were towards me. I have noted that the young birds usually insist that their parents come to them, and even sometimes retreat from them.

Roll 6. 0 to 4.5', overcast, 1" lens, using stop f4 (half way between 3.5 and 5.5). Dis. abt. 9'. Dish was at 8½'. One young bird.

To 15', using stop 5.6, better light. Brownie feeding one.

15 to 27', full sun, f8 stop, Brownie feeding one young bird.

To 43½', Brownie getting worm out from under a rock. I put this worm under the rock, hoping that she would give an exhibition of turning it over. She was keen enough about the worm to do it--there was a

lot of by-play not taken--but fooled me by digging it out instead.

June 10th. Away all day until nearly 5 P.M. Could not find any

Brownie digging a deep narrow hole where she had to put her head down so deep that her tail was straight up in the air. She would not pay any attention to me and when I approached her, ran away. When it came time to give the youngsters a last good feed, however, she was as friendly as ever. I attribute some of the standoffishness to the fact that she had never seen me before in the boots, shorts and khaki shirt I had on, so that I seemed a stranger to her.

June 11th About 7:00 A.M. I went to the glade. All was quiet, except for the presence of the Spotted towhees but were eating the last of the soft food placed there for the thrashers. I sat down in the chair and Brownie quickly popped out, soon followed by all three of the young birds. Brownie at once commenced intensive feeding operations and as the young ones came within reach on the ground I shovelled soft food into them with the wooden spoon. As a result of combined efforts all were soon satisfied and retired into the bushes, where they sat about six or eight feet away and preened. Greenie was not in evidence. This is the first time I have had all three of the young thrashers with me at the same time. This was, of course, due to the presence of their parent. When Brownie has a big job on her hands like this she will take food wherever I hold it, even along side of my face. In feeding the young sometimes the tip of her tail will nearly touch the bill of one of them as she turns to me for more food, and it is [illegible] low it.

Similar performances were repeated for visitors at various [illegible] during the day, [illegible] with only two of the [illegible]. When all visitors had left, I placed [illegible]

after having fed him soft food
young birds--there were no other birds present--and after a time he managed to pick it up awkwardly after dropping it several times and handling it gingerly. He was at a loss as to what to do with it--perhaps he had had enough-as his crop stuck out--and stood there holding it. At last he ran into the bushes and I could see him standing face to face with another young thrasher, neither making any move about it. This lasted for, perhaps three minutes, when he gulped it down without much difficulty.

The eye color of the young ones is no longer a uniform black (or nearly so). The irises of all of them appear to be taking on the color of that of Green-eyes. This makes me think more than ever that the latter is a younger bird than his mate.

This morning Brown-eyes jumped up into my hand carrying a yellow-jacket
~~hornet~~ in the tip of her bill and was about to pick up a meal worm, when I discouraged her. She then fed it to one of the young.

I neglected to record that Brownie dug up a centipede day before yesterday and laid it by the hole. Each time it was covered by loose earth from her continued digging she unearthed it and laid it aside again, showing that she intended to use it eventually. This happened four times and she then took it to one of the young birds.

9 A.M. (this paragraph belongs on preceeding page) 1" lens, f/8 stop, bright sun, from 48½ to 75½, Brownie feeding, 3 young, but perhaps the two in the upper left hand corner were not in the picture . About twenty minutes to eight, P.M. the two parents were supervising the selection of roosting places for the night. There was a marked tendency on their part to accompany each of the young to its resting place. In the case of one youngster, this was definitely the case. Brownie, in this instance, partly preceded and partly followed, talking and encouraging. She then went to another of the young ones. At intervals one or both parents would appear near the top of the old

and scan the surroundings, presumably for enemies, as they were seen to marked the positions of birds entering the trees surrounding the glade and occasionally drove them out or registered protests with them, as indicated by complaints of robins, quail and wren-tits and their occasional hasty departures when one of the thrashers investigated.

June 12th. About 7:30 A.M. I went to the glade. Everything was quiet and no signs of life about. I whistled and called, but got no response. Waiting brought no results. A tour of the grounds disclosed nothing as to thrashers and there was no response from the canyon. At last there was a patter of feet behind me on the road and Brownie appeared . I gave her a couple of worms which she ate herself--a new procedure for her so early in the morning--and then two more with which she ran off along the road toward the glade 60 yards away. I followed by another route and went directly to the small cove in the bushes in the glade where I have been taking their pictures, and crouched by the food dish which I had previously filled with soft food. There was an immediate irruption of thrashers, all five appearing almost instantly within arm's reach. On e youngster, in fact, flew out of a bush and lighted on my arm. They swarmed all around me. Greenie, for some reason, left at once, but Brownie and I were kept busy feeding the young,who will not yet eat out of the dish, I giving them soft food with the spatula and Brownie giving them both worms and soft food, getting both from me and, finally, the latter from the dish. For the first time the young were very talkative. When all were satisfied, Brownie went up into the old oak to sing a little, the youngsters remained with me for a time and then all three began a game of tag in and out and around the bushes. Their eyes are very much like Greenie's--as far as I can see, all alike. I think this is a definite change from the color while in the nest. There the irides and pupils could not be distinguished. Now the former are distinctly lighter and more olivaceous.

Without attempting to be exact, but without serious error, it may be said that these young birds were hatched in about two weeks, stayed in the nest about 18 or 19 days , could not fly for about 3 or 4 more days and are now about 28 or 29 days old--say one month.

About 10:00 a luckless California Jay invaded the premises. As I was trying to locate him, about 6 Brown Towhees and 2 robins chased him out of the pines into another tree, then toward the old oak where they were joned by both Brownie and Greenie. I could not see everything that happened, but they got him down on the ground and he cried pitcously. Feathers were drifting along the course of his previous flight and they were not all blue jay's either, although they had established frequent contact with him in the air. Brownie soon came out of the melée with feathers awry but quite calm, as she came to me for worms without being called. It is impossible to enumerate all of the birds that joined in the pursuit, but I saw and heard along the route of battle, the following birds:

Wrens,
Plain Titmice,
Purple Finches,
One Hummingbird,
Brown Towhees,
One Spotted ditto,
Lawrence Goldfinches,
Greenbacked Goldfinches,
Wren-Tits.
Robins.

The Brown Towhees and Thrashers were positively engaged, the others flew into the route of battle and if they did not get into the fight they encouraged their allies by voice and presence at least. The distance covered with twists and doubles was, perhaps of the order of 200 yards, and the wind-up was about 30 feet from me. I searched the spot after it was all over but the jay had undoubtedly decamped. This spot is marked by a dense clump of baccharis sprouts coming from the stumps of bushes that had been cut off and, curiously enough, wittnessed the close of a similar pursuit a couple pf months ago.

10:40, as I set the camera up, the young thrashers came swarming out

to be soon joined by Brownie; but as there was no food in sight they adjourned to the bushes. I note that the "yellow rubber hinges" of their beaks are now almost the color of their parents'. On taking my position on the ground, Brownie and the three youngsters came out promptly and all had a good feed, Brownie retiring to the oak to talk to herself, the young remaining to do sun-fits and to dig under each other and peck at their toenails. (Took from 75½ to 97, i.e. 21½ feet of film--the camera running down--1" lens, set at f/8, dis. abt. 10') As the birds are now getting easier to control and there is a better chance to group them, I hope to use a 4" telephoto on them at about 10' and get larger images.

1:07 One youngster came out by himself to where I sat, without urging. This is shown from 97 feet to the end. After feeding he picked up the crumbs and ate them, showing that they can feed themselves now, if food is available and recognizable.

When Brownie wishes to eat soft food out of the dish, if the wooden spatula is in it, she invariably seizes it with her bill and throws it away. The meal worms are no longer necessary, as all five birds eat and like the soft food, but I can get the adults to come more quickly, and certainly with the worms and can "spot" them more accurately for a picture if I use them. Greenie is outside the glade somewhere now a good part of the time, Brownie doing about all of the feeding and very little food is brought in by the parents from the outside when I am about.

At 4 o'clock I went to the glade and sat down in the little cove. Almost at once the three young thrashers came to me and I started to feed them. Brown-eyes then appeared from the opposite direction, a large part of her work consisting in watching me feed each bird and then picking up what I dropped and seeing that it reached the proper destination. Green-eyes then came and circled about the

outskirts of the party. I tossed him a worm, then Brown-eyes took him one, which he ate. She then gave him soft food, which he also ate; then another worm which he asked her for and then gave it to one of the young. I offered him soft food in my hand and he crept up saying something in a little squeaky voice that sounded like;"Meaning me?" He and Brownie both ate from my hand at the same time, but Greenie would continually ask her for food, even with a handful of it right under his chin which he was already eating. She always gave it to him. I can understand his actions only on the assumption that he is a very young bird . It will be recalled that he wanted me to feed him with the spatula when he was on the nest. which I did, just as if he were a baby bird. Now it develops that the young have his eye color or vice versa. I could check this easily with all five birds within reach and myself the center of attraction for the time being. I have not had a good opportunity to compare the scales on his feet with Brownie's.

When all the other birds had left he still hung around me --contrary to his usual practice--and continued to eat from my hand, still repeating his new phrase. Brownie,before leaving, started an excavation under one of my heels. One of the three youngsters has a curious habit of coming forward for food and then backing away slowly with his mouth still open when it is offered him. Their vocabularies are increasing rapidly and one of them, I am sure, tried to sing this morning; anyway he assumed a singing posture, emitted a sort of warbling sound with corresponding throat movements. I think none of them left the glade today. If not, they are wandering boys. I wonder how soon the parents will drive them out, if at all.

At ten minutes to 8 P.M. the young ones had (back ?) all seen safely to their individual perches. One of them occupied the exact spot that was used last night. I suppose it was the same bird. The parents had just climbed up into a pine tree, but as I went under it to look

up at them, they came down and wandered about, then retired to the [illegible].

June 13th. At 5:45 A.M. there was no sign of the parents in the glade, but I could see one of the young thrashers in the bushes. I produced soft food and all three of the young came to get it as it was offered to them on the spatula. Two were a little shy, but the other one was quite forward. Neither parent appeared during this feeding operation. When it was finished, the young retired and I heard a low, husky warbling song suggestive of the thrasher undersong. Investigation disclosed one of the young thrashers about 8 feet away in the bushes as the musician! This at one month from the egg! He was very intent on his song and introduced variations like a professional, although the caliber of his performance was, naturally, not of high order. He sang with closed bill, but with distinct throat swellings. If this precociousness is indicative of what may be expected of him in the future, he should become a great singer.

9:15. For the last two hours Brownie has sung almost continuously and is still singing. I have never before heard such a variety of sounds from any one bird. Besides her own thrasher melody she introduces at intervals the linnet, robin, flicker, California Jay and, although I am not quite certain, I think the Steller Jay. All of the introductions, except the linnet's, were very much softened, the linnet's was much louder. Her own music consisted of an astonishing variety of phrases and, while these were often tepeated, there was constant insertion of new and ingenious phrases. This occurred so often and so unexpectedly that one could not help laughing at each new turn. I do not know the occasion for all this, unless it be that family cares have become much reduced through simplification of commissary operations, thus

providing ample leisure time. The singing was done from a dead branch of the old oak over my head, from which she could command a view, not only of the surrounding country for miles, but of everything taking place in the glade below where the young birds for the last day or so have continued to stay without straying. In order to keep them well fed all she has to do is to drop down from the tree and get food either from me or from the disk that is kept there. The young birds, if not already playing around me pecking my ankles and pulling the tongues of my shoes, quickly gather about her and it is merely a matter of reaching into the dish, turning and pushing the food down one of the throats, then back to the tree for more music. ~~Simple~~. If singing palls on her, then she can pry off loose bark from the dead limb and drop it on whatever happens to be beneath at the time. The young usually lie about the ground after a good square meal for a short time sunning and preening, then play with leaves, twigs and other loose objects and chase each other around the glade. They also now pick up the crumbs that are dropped, and one of them this morning went to the food dish and helped himself. I have not seen either of the parents make the slightest attempt to instruct their young in anything whatever. The nearest approach occurs when Brownie reaches over and taps one of them on the back of the head to make him open his mouth when he is not paying attention; but this is not often necessary. I have seen it done perhaps half of a dozen times and the response has always been prompt. The insides of their mouths are now pink instead of yellow. They are inveterate sun-fitters.

12:20 P.M. One has just taken the first observed drink of water, followed by the first bath noted. They chase flys and moths, but I have not seen them catch any. One picked up and dropped a sow-bug several times; Brownie noticed what was going on, seized it and flicked it away. I have seen her look at them but not touch them, with the exception noted.

(Another Brown Towhee nest--the sixth this year--and the 33rd. of all kinds. The Chipping Sparrows still frequent the same tree, but no nest found).

7:25 P.M. Thrashers do eat Argentine ants when they feel like it. Brownie was just loafing around me hoping that I had some worms(but my box was empty) when she spied a lot of ants swarming out of a hole and began picking them up as fast as she could. She ate perhaps 15 or 20, and,although the supply was unlimited, soon tired of them. They were the adult ~~Argentine~~ ants.

June 14th. At 6:55 A.M. I went to the glade. Brownie appeared first, without my calling, then one young one after another until all were there, and finally Greenie. There were then five thrashers, all of whom received food from me direct, Brownie assisting in the operation. Greenie did not help feed the young, but got worms from Brownie and from me, eating them himself.

((Nest No.34 This is either a grosbeak's from which the young have just left--as they are thick aroud there this A.M.--or an unfinished thrashers--I think. It looks like either at present, although large for a grosbeak.

Nest No. 35 is within 8 feet of it in the same tree and looks like a towhee's).

About 1:00 the thrashers performed for three visitors--all but Greenie. The three youngsters, when they begin playing, make a whirlwind in the glade. The largest one is as big as his parents, but has a shorter bill and tail. They fly very well and will occasinally take worms from the hand. I have not seen Greenie feed them today; on the contrary he has repulsed them several times when they have come to him for food. Greenie may have grown lately for he is certainly not smaller than his mate now, to the eye at least. This afternoon Brownie threw my spatula out of the food dish about as fast as I could put it in again. Once or twice,after throwing it out, she eyed it

as if to see whether it was going to climb back in again.

Roll No. 7 6 to 11, a fish of Greenie digging. To 77, Brownie and young ones--Brownie throws spatula out of dish. Foregoing with 1" lens, set at f/8, dis, abt. 8 to 10ft. Full sun.

Between 7:30 and 8, the parent thrashers, from their vantage points on the dead limbs of the old oak, were supervising the retirement of their family, making short excursions to the various points selected, with the evident intention of seeing that each was comfortably settled and not being crowded by wren-tits, quail and robins--in particular--who use the same trees as sleeping places.

Brownie twice today, very obviously, mistook Greenie for one of the children as she was carrying food from me to them. Each time she corrected the error just as Greenie was getting ready to receive the contribution by crouching and opening his beak just like a juvenile--which I think he more or less is. Brownie is a motherly soul and sometimes I think she feeds Greenie, even when he does not ask for it, because she "just has to" feed something.

June 15 At 7:45 this morning I went to the glade and Brownie promptly marshalled the whole family for grub. As the morning was chilly I gave them a nice warm porridge of soft food.

8.50 The mystery of nest No. 7 is solved. At this moment Brownie and Greenie are both sitting in it! This accounts for their long disappearances from the glade; but they have certainly been sly about it. By stepping outside the French window where I am writing, on to the terrace I can see the nest in an oak about ten feet above the lower service road. As the trees are spotted on the map, the nest is exactly 82 feet from this chair, about 30 feet west of the western edge of the oval lawn and about 75 yards from thrasher nest No.3. with a ladder (See illus. p 213A)

It is a very easy nest to get at. The only objection I can see to its location is that every delivery wagon that comes inside the grounds

Thrasher Films
1933.

Reel 1. 50 ft. less cut-out. May 27-28, pp.171-175

Begins with Greenie coming to me in the glade, but afraid of the camera.
Changes to Brownie doing the same, although the she finally gets worm from me. Worms are taken to nestlings.

Reel 2 50 ft. less cut-out. May 28, pp.171-175.
Scene 1. Opens with a thrasher on the oval lawn. Short.
" 2. Brownie in the glade, much afraid of camera, but gets a few worms from me for nestlings. Her timidity well illustrated.

Reel 3. 100 ft. May 30, pp. 180-81; 31st.p. 183. June 1, p185&88.
Brownie has been seasoned to the camera by running it empty and this film shows the effect.
Scene 1. Begins with Brownie jumping up to my knee--fine back ground of sage, etc. One of the best pictorially.

Scene 2. Long film showing Brownie loading up with worms for the young.
Scene 3. Bath dish included to see if she will bathe (Doesn't
" 4 Weighing scene, Brownie on scales.
" 5 Switches to oval lawn, gets worms from Julio, but repeatedly comes to me despite my having the camera.

Scene 6. Close-up of Brownie taking worms from my hand on arm of chair. Good. Loads up with worms for young 200 feet away. Drops one and peers down at it. Eats one herself. Looks at me.

Scene 7. Attempted close-up bath scene that doesn't work. Fragments of both thrashers seen. I hold worms on opposite side of dish from Brownie and she walks through the water to get them.

Reel 4. 50 ft. June 7, pp.199-200.
Scene 1. Opens with self in chair, Brownie on hand taking worms from box.

Scene 2. Bathing dish in picture. Greenie taking worms from ground. Note drooping wings, unlike Brownie. He finally takes worms from hand, then jumps up on it, taking worms to the nest. About ½ Greenie and ½ Brownie. Iluustrates difference in tameness and wing carriage.

Reel 5. 50 ft. June 7, pp 200-201

Scene 1. Opens with me in chair, bathing dish handy but not used. Brownie with fine back-ground of fern and sage. Digs by dish and throws leaves into it.
Scene 2. Shifts to feeding cove in glade. Brownie preening by dish. I to right offstage.

Takes one sip. Looks for hawk. Does mild sun-fit and preens again. One youngster comes out. She feeds him. I offer food as she stands on dish, but she jumps to my hand and looks at me. Jumps off. Reel ends.

Reel 6. 100 ft. June 9-12, pp. 203-8.

Scene 1. Opens in same cove with one youngster. I give him food on spatula while Brownie comes and watches. He backs off. Brownie takes food from spatula and gives to him.

Scene 2. Brownie jumps to hand and eats; then eats from food dish. Takes food to one youngster. She looks up at me, returns to food dish.

Scene 3. Same location. Brownie looking under a rock where I have put a worm. Gives up. I put another under rock (not shown) and Brownie returns before I take my hand away. I point to rock, and talk to her. she looks up at me questioning- and takes no action. (I really want her to show how she turns rocks over). I touch rock and she returns. I point at it repeatedly. She seems to try to understand; looks under it, digs and gets the worm. She leaves.

Scene 4. Same location. Brownie feeding one young bird, getting food from me. I offer him food on spatula; he backs off. Brownie comes --three young birds now. We conduct joint feeding operations. One youngster uses his foot to stretch a wing out to its full extent. Brownie eats. More joint feeding. I feed young direct, Brownie picking up the crimbs. She intercepts food on way to young. Everybody is well fed. Roll ends.

Reel 7. 100 ft. June 14-16, pp. 213-215.

Scene 1. Same location. Begins Brownie eating from soft-food dish. Then four thrashers in the picture (B. and 3 young). I feed young. B.comes to dish and throws out spatula; I replace it and she throws it out again. I replace it; she eats heartily and does not throw it out.

Scene 2. Shifts to close up-of Brownie eating from dish held in my hand, then soft food from hand, then digging it out be-tween fingers

Scene 3. Telephoto of Brownie at the original thrasher feeding stand at the oval lawn eating suet and scratch-feed. Takes suet to young not in view and comes back.

Scene 4. Same subject with 1" lens (smaller image), to show a thrasher running to me. She runs to me and one young bird appears. She takes worms from box; I cover box and "shoo " her away to show her running in opposite direction. She comes back, eats more and is shooed away again.

Scene 5. Brownie and youngster in same setting in front of me. I feed him and test reaction to teasing--he shows no fear. Brownie comes and eats again (Wren-tit on stand.

Scene 6. Greenie comes out and digs in lawn. Film ends.

Reel 8 100ft. July 14and 15, 18 and 20. pp.271, 272, 279, 283, 284. (A fuzzy reel throughout but kept on account of its rare subject)

Scene 1

Brownie and gopher snake. Brownie pecks him; I let him go. She hunts for him. I get him again.(not shown). Brownie reappears and turns job over to Greenie, who was not known to be near. Greenie chases him into flower bed and looks for him.

Scene 2. Shifts to lower road to show Brownie coming from a little distance.

Scene 3. Brownie "does" a good "sun-fit"in glade.

Scene 4. Brownie attacks another gopher snake; catches him by the tail and chases him with blows under a dwarf heather; looks for him.

Scene 5. 2 youngsters in glade resting.

Scene 6 Brownie drinks from dish. Good, but not one of her two unusual drinking forms.

Scene 7. Brownie digs nearby and sun-fits.

Reel 9. 50.ft. July 28. Page 298.

Scene 1. Opens with Greenie in glade on ground, then on baccharis. Rather dark, but shows how bird blends into back-ground.

Scene 2. Opens with Brownie alertly watching Yellow-bellied Racer on oval lawn. Circles about him warily, but does not attack. Snake strikes at Brownie and by watching closely it can be seen that she detects his preparatory movements and gets ready to jump in advance of thrust.(These snakes strike viciously)

Camera runs down at this point and Brownie chases him out of he field before I canget ready again. She chases him down the bank, through the bushes, across another road, down another bank to a fig tree where she and Greenie (just arrived) lose track of him. Of this pursuit I catch but a fleeting glimpse of them crossing the road.

Scene 3 Short one of thrasher on lawn.

" 4 Panorama of oval lawn. Very jerky. Greenie and one youngster may be seen in back-ground--very small. Reel ends.

UNIVERSITY OF MICHIGAN
MUSEUM OF VERTEBRATE ZOOLOGY

# THE SCIENTIFIC METHOD

In its evolvement, this statement has gone through many revisions. Its present form is approved by so many who have done successful research work that its acceptance as a true description of the scientific method is justified.

This statement will be of utility in all departments of science in high schools and in colleges as a means of instruction. Students can place copies in their science note books for frequent reference. It will be useful to graduate students as a guide in self-training in the fulfillment of the scientific method, and to all research workers in planning and carrying through experiments, also in evaluating the scientific quality of the researches of others.

MILTON FAIRCHILD.

10 May, '26.

The scientific method necessitates intensive, systematic and persistent brain work under control against misunderstandings, superficiality and bias, and in complete loyalty to reality and the truth.

None but those having aptitude, instruction and training can be successful in the use of the scientific method of thinking.

*Description of the Method*

(1) GATHER DATA on the problem or within a selected field according to some adequate, sound plan by means of numerous and accurate observations made with the human senses, assisted and corrected by instruments of precision. The observations are usually with a well-defined purpose but sometimes for information according to opportunity. Observations must be recorded in definite terms and measurements and in specific statements. Many observers may collaborate in gathering data.

(2) CLASSIFY AND ORGANIZE DATA on the basis of similarities, variations, activities, processes, causes, results. Distinguish between essential and superficial characters.

(3) GENERALIZE to get principles and theories into tentative form. Use constructive imagination, discernment, known principles to formulate reasonable generalizations that solve the problem or explain the known facts in the selected field. Many researches accept a mass of classified data and verified generalizations and then proceed to solve some problem by formulating hypotheses thereon and verifying these, without including general gathering of data and classification work.

(4) VERIFY generalizations by controlled experiments, by tested predictions of results, by repetition of experiments and the gathering of additional data. Appraise data by coefficients of variations and of correlations, and by probable error. Determine sources of error in method and apparatus, and evaluate by auxiliary investigations. State all assumptions and include them in the conclusions.

(5) REPORT the research in full and subject results to criticism and verification by others competent to collaborate.

(6) ANNOUNCE the results of the research to the general public for practical use.

## THE CHARACTERISTICS OF THE SCIENTIST

(1) Sincere and open-minded; not diverted by personal interests.
(2) Alert and alive to truth, vital; not complacent.
(3) Poised; not excitable, hysterical or melancholy.
(4) Discerning and thorough; not superficial.
(5) Accurate; not indefinite.
(6) Inventive and constructive; not lacking initiative.
(7) Independent; not suggestible.
(8) Thoughtful and persistent; not merely impulsive.
(9) Industrious and energetic; not lazy and dilatory.
(10) Executive; not haphazard.
(11) Purposeful; not led merely by likes and dislikes.
(12) Self-confident; not timid.

## VERIFICATION IN HUMAN SCIENCES

Tentative generalizations must be valued merely as opinions until verification has been accomplished. Experiments on a small scale, carried out under trained leaders, on scientific plans, and prolonged for a sufficient time, under normal conditions and when real motives are operative, repeated again and again with uniformly desirable results, will constitute a verification of plans for human welfare. These small-scale experiments should be planned on thorough studies of the situations to be improved, and according to mental calculations on all the discoverable causal factors of human welfare.

## INTELLECTUAL IMMORALITIES

(1) Carelessness in observations, "sloppy work."

(2) Inaccuracy in determining units to be counted in statistical research.

(3) Slovenliness in logic, fantastic explanations.

(4) Generalizing beyond one's data.

(5) Confusing opinions with knowledge.

(6) Confidence in the results of research in disregard of weakness in proof and verification

(7) Contentment with "discussion."

(8) Poor judgment in research plan and procedure.

(9) Wavering interest, flitting attention, attracted by peculiar superficialities.

(10) Egoism allowed to crowd one to the invention of "new" theories for personal distinction.

(11) Inventing interesting theories for the sake of selling them in books, articles, lectures and conversation.

(12) Pride allowed to result in persistent belief in a theory for which one has been given credit.

(13) Formulating an hypothesis on weak bases of facts, and then becoming blind to facts in opposition.

(14) Emotionalism during research, "I believe" instead of "I have proved."

(15) Adjusting theories to popular likes and dislikes.

(16) Opposition to proof of another's theories because of jealousy.

(17) Opposition to a theory merely because of ignorance and stupidity, "I can not see how."

(18) Rushing into print with a report of research work that justifies no conclusions.

(19) Degenerating into a propagandist of an unproved hypothesis, instead of being true to the research purpose of discovering the truth.

(20) Cowardice in supporting a verified generalization because it is unpopular and conflicts with selfish interests.

(21) Impatience, unwillingness to proceed step by step through a research.

(22) Indulgence in dense verbiage for the sake of appearing superlearned.

(23) Ignorance of the mechanism of instruments of precision, which results in their use when out of order.

(24) Popularizing tentative generalizations for the sake of personal publicity.

(25) Resort to the authorities, or to sarcasm and ridicule, against data, arguments and veri fications.

Letters of advice are asked from all interested, especially covering ways and means for controlled experiments and other verifications in the human sciences.

CHARACTER EDUCATION INSTITUTION,
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Plate No. 4.

passes directly under it. The birds, however must have discovered this when they built it. The twig picking-up-and-dropping recorded in these notes when the young had left nest No.3, must, after all, have been a sign of intention to build again . I have also noted, but not recorded previously, that Brownie, while feeding the young the last two days, has occasionally picked up and dropped a soap root fibre. Evidently that action coincided with lining activity. I noticed yesterday that the nest was not lined. I stood under the nest a few minutes ago and both birds regarded me very complacently. I wonder if they think they have "put one over on" me. If so, they are pretty nearly right. Further, I suspect, that they have entangled me in another invisible web which will ~~xxxxx~~ tend to limit my radius of action. However, they seem to like this place.

11:30 Greenie sitting in the nest "doing nothing". Brownie in the glade brought the family out to eat as I sat down. I covered the worm box with my hand so that she would have to work to get the worms. She repeatedly seized the rim of the can in her bill and tried to get it out from under.

Brownie (1:10 P.M.) is having a long shift on the nest. Greenie is in the glade looking out for all three babies. His attitude toward them is a little mixed, as he sometimes repulses them very roughly and at others feeds them worms which he gets from me. Perhaps he partially realizes that, in running two establishments at the same time, he has some obligations toward both. The new state of affairs will make it difficult, if not impossible, to get all 5 birds together for a picture.

June 16th. At 7:30 this morning, Greenie and the three youngsters had left the glade and were on the oval lawn, which showed evidence of violation of the gentleman's agreement in respect to digging in it. Brownie was on the new nest, and in the absence of her restraining influence it looks as if this ~~xxxx~~ might be the beginning of

the break up of the family circle , especially if Greenie persists in his present policy of repelling its members when they ask him for food. He took worms for himself, when they were offered him, and repulsed the babies and they showed no disposition to follow him toward me. When I approached them, they retreated into the shrubbery slowly. Brownie has been the tie that has kept the group intact, seemingly evidently. When Brownie came off the nest there was a noticeable change. The oval lawn seems to have become, for the time being at least, the center of activities.

I focused the movie camera with a 4" telephoto on the original thrasher feeding table, 26 feet away. Brownie soon came to the table for food for the young. (9A.M.--variable light account of floating clouds--f/5.6--26 feet--footage from 47 to 59½)* I wanted to get her running to and from me in line with the camera, so changed to a shorter focus lens, without moving the camera. (Footage from 59½ to 78--1" lens--light fairly good--f/6.7--Dis. from 26 feet down to 10 feet) As the sun became stronger, I changed to f/8, and as a wren-tit appeared at the table, although rather far away for so small a bird, I took it with the 1" lens. (Footage to 80½) In the meantime Brownie was amongst the columbines with a big black and yellow swallow-tail butterfly, which she had seized on the grass, and which she gave to one of the young. I was not quick enough to get her in the act of catching it, as the camera was on the tripod. (To 95 feet, Brownie feeding young on the lawn--Also I feed one of them)

On change of shift at the nest, Greenie came to the lawn and started digging it. I now have, I hope, positive evidence to use against him in the shape of the last 5 feet of film. (95' to end--1"--f/8--camera held in hand--Greenie repudiates Lawn Agreement).

I then sat on the grass 3 feet from the feeding stand. Brownie came and began feeding two of the young --the other being absent-- with kernels of corn and wheat picked out of the suet, the latter

*See p 215 A for enlargement of one frame from this film

Brownie, June 16th, 1933, on the feeding stand at the oval lawn getting food for his brood. (See p. 215).

This is the stand that was made in a successful effort to induce the thrashers to patronize it instead of digging up the lawn, in September 1932. (See pp 3 an 4).

(Enlarged from motion picture film).

having melted in the sun. Yet there was soft food available right "under her nose." This seems to have been a deliberate choice on her part. She followed this by digging in the earth and picking out small pebbles and pieces of gravel which she fed to the young. There can be no mistake about this observation, as the young were lying comfortably within three feet of me also. They were also coming to me occasionally for soft food. When they had had enough they settled down and dozed about three feet away and one of them at intervals practiced his song, previously noted. This was done with beak open, but it was noted that he had his beak open already because of the sun's heat. Previously one of these youngsters, under the evil influence of ~~Brownie~~ Greenie, had imitated the latter in assaulting my lawn and had secured ~~an~~ two angle worms. The first, a small one, was immediately abandoned. An attempt was made to break up the second, but it was also abandoned in the end. I naturally wondered where the third youngster was all this time, as it was now getting on toward noon. I found him in the glade all by himself and apparently contented. After some coaxing, he came out of the bushes and had a worm and some soft food.

2:00 P.M. Away all the afternoon until 5:15, at which time I entered the glade, having seen nothing of the young birds at the oval lawn. Immediately one came running towards me followed almost at once by the other two. I sat on the ground and gave them all the soft food they wanted and a worm or two. Greenie appeared shortly, and after administering a rebuff to one of his offspring, came to me for food also, all of which he ate himself. Clearly he thinks it time for the little fellows to shift for themselves.

June 17th At 6:30 a.m. Greenie was in the nest. I went to the glade and Brownie and the three youngsters came out for food, which I gave them as they swarmed around me where I sat on the ground. For

soft food only was given, Brownie sharing in the labor of [illegible] it down the youngster's' throats. I then gave Brownie a worm or two and when she found I had the box with me, would not be denied. I covered the box with my fingers to make her work for them and she went at it just as she does on the ground. In order to get a firm base to work from, she would sink her claws into my trousers so that they penetrated to the skin, or get a firm grip on a finger and hammer and pry with her beak. She is surprisingly strong. If I held the box over my head she would go after it there. In this way she got about thirty worms, all of which she gave to the young. When the latter were satisfied they began a riotous game of tag in and out of the bushes and Brownie went up into the old oak to look at the country and sing a little.

8:45 While standing beneath the oak by the front steps, Brownie dropped down out of the tree at my feet and loitered about waiting for me to produce something of interest. She found a hairy caterpillar and after inspecting it carefully, picked it up and worried it about for a minute, brought it over to me to see if I would add something more to make it worth while, but as I did not, started running down the road toward the glade, flying the last 40 or 50 feet about a foot above the ground. This is the first time I have seen a thrasher take a hairy caterpillar.

10:20. At 10 o'clock I went to the glade and before I could sit down on the ground at the customary feeding place, Brownie and her whole brood were out of the bushes. The scene of the earlier morning was repeated, except that I carried no worms this time, purposely. †
When all the young had enough to eat, Brownie went up into the old oak. I noticed that she was looking down at me intently--a new phase- then she dropped down 20 feet [illegible] at my feet and crouched as if to spring. She then climbed up into a bush

the branches of which were touching me, and by turning my head slowly, I could see that she was very much interested in my upper story. Several times she made as if to spring upon it, but could not muster sufficient courage. She then jumped down , circled about me at a distance of one or two feet with her eyes fixed--as near as I could judge --upon the crown of my hat. At least 20 times she crouched to spring up and at least 15 times half jumped and half flew from 6 inches to 2 feet up toward the top of my hat, but each time lacked the courage to complete the effort. Thinking that there might be a worm up there which had escaped, as they sometimes do, and appear in unexpected places, I took off my hat and examined it, but found nothing, Brownie meanwhile watching and climbing on to one of my hands to have a look too. Next she began to consider jumping upon my bare head, going through the same tactics as before. When I put my hat on, she was still not satisfied. Finally she went to digging, but every little while would trot back to see if there were new developments. This behavior is rather puzzling. Several times before she has climbed to points a little higher than my head to inspect me from above, but never before has she acted as if my roof was on fire. From the beginning of the episode I attributed her antics to her expectation that the next course offered by me would be worms, as on previous occasions, but as they were not forthcoming, she decided to look for them elsewhere than in my hands. I do not think that she knows where I carry the box and it may be that she hoped to discover its location. However, I do not know the true explanation. On occasions like this she is full of animation and is very interesting. The youngsters took no part in this episode, for as soon as they had had enough to eat, they climbed into the branches of the sage 3 or 4 feet away and dozed.

11:45 Brownie dug up a large angle worm, tried to break it up, but could not; then abandoned it permanently. I wonder if the toughness of these worms has not something to do with the birds' indifference

to them.

June 18th. At 7:20 A.M. Greenie was in the nest. On going to the glade, the three young birds ran out of the brush to my feet. Brownie was not in evidence. The young birds, instead of opening their mouths to have the food put down their throats, they picked it off of the spatula, but did not seem very hungry. I went to see if I could stir up Brownie to try to induce her to come to the glade with me and get a little more action, however, she appeared voluntarily and lent her assistance; but the young ones showed little enthusiasm for her ministrations, having evidently had enough. About 8:30 I went to the glade again. Two of the youngsters came at once, the third was practicing his "song" out of sight nearby, but came later. One of them is lighter in color than the others and one is larger; but I have not been able to determine definitely whether the light one is the large one, as they move about so rapidly. Their bills are definitely curved, as they have been for some time, but the radius of curvature is the same at all points as far as can be seen, i.e. their bills are arcs of circles-roughly--and show no tendency to hook at the ends, as yet. Their tails seem to approach adult proportions more rapidly than their bills. They have all of the mannerisms of their parents. They have never been clamorous feeders and for the most part are silent. They dig, bathe, "do sun-fits", preen, pick up twigs, acorns and other loose objects and also the crumbs dropped when being fed.

8:30 P.M. The young have remained in the glade all day. Brownie still comes and feeds them when off duty at the nest.
(The second Wren-Tit's nest definitely located today. They have been scolding me at that point for a long time, but no search was made. It is in one of the low branches of an oak forming the S.E. enclosure of the glade, about three feet from the ground. There are four eggs, Julio says, but I have not seen them, as there is a bird on the nest each time I go there, and they do not fly).

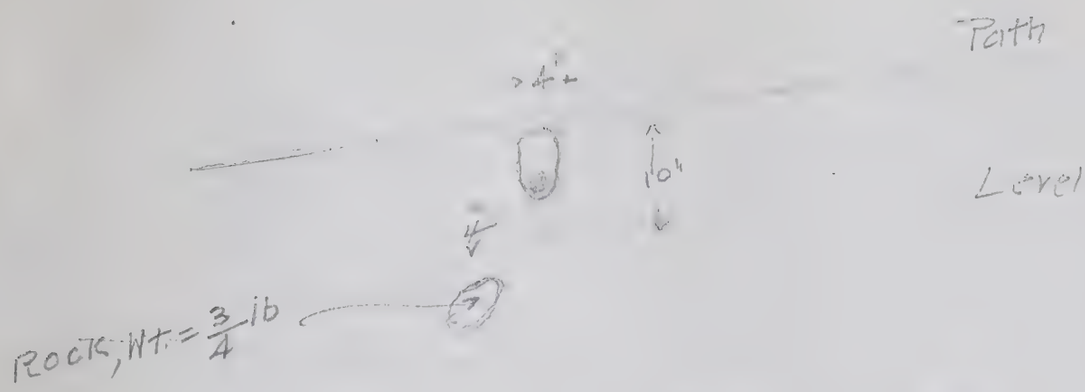
June 19th. At 7:45 Brownie, in the glade, brought out her flock to be fed. After this they had a game like hide-and-seek, one bird hiding behind a bush and dashing out at another one when discovered--as near as I could tell--then chasing the other which would dodge behind a bush and so forth. Sometimes they would all hide, crouch close to the ground, peek out at each other and then there would be another wild chase.

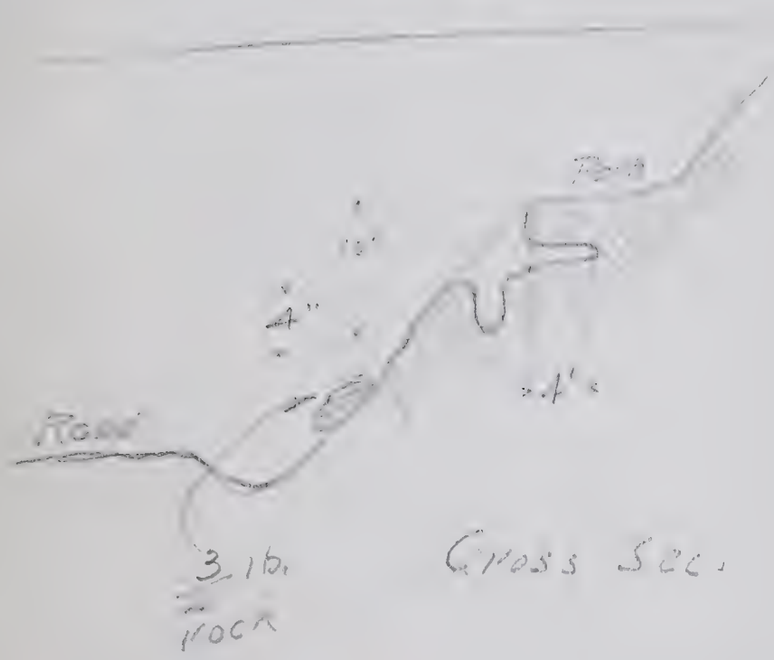
I looked closely at the wren-tit in the nest and the iris is not white as described in books--although nearly so--but brassy in appearance, showing a perceptible yellow tinge. The bird withstood close inspection without flying away. I had looked for the nest--not very carefully--some time ago in the same tree when the birds were seen carrying nesting material and it was only an accidental squirt of water from the hose which caused the occupant of the nest to flush and disclose its presence. One is able to stand comfortably in the open and see the nest and its contents without moving a twig or touching a leaf).

About 10 A.M. in response to a call from Greenie in the nest, Brownie relieved him, but with reluctance, as she wanted to come to me for worms. I went to the glade and two of the youngsters came out to be fed. When Greenie appeared he wanted food for himself, but did not offer to feed the young birds and did not drive them away. I had thought that one of the babies was beginning to show a little more red in its iris a few minutes before Greenie arrived, so as I had an opportunity to compare their eyes when they were now at arm's length from me and a few inches from each other in identical light , I looked carefully, but saw no differences in color or shade and no change in Greenie's eye color since it was first noted.

10:45 Still photo of hole dug in bank by the thrashers. f/16--1/25 sec. --6 feet. A hard rocky bank, where a pipe trench had been dug and back filled with clay and sand-stone. (See next p.)

Below is diagram of excavation:



11:30 The youngsters are getting pretty lazy. Just now when Brownie came from the nest to feed them, they lay on the ground with their bills not more than six inches from the food dish while she fed one after another. Not one of them attempted to help himself. Just before coming out of the bushes one of them uttered two well developed thrasher "Scrips", the first I have heard from them. In feeding, their conversation consists of a low twitter, usually three notes at a time. It is so low that some visitors are not aware of it at first when not more than six feet away.

Brownie's shifts at the nest appear to be of short duration as compared with her mate's and also at longer intervals.

She appeared in the glade at about 2:45 and at 4 was still there, when I left. She dug up a piece of wood which swarmed with Argentine ants and their pupae and ate the latter greedily without calling her family. They soon, however, saw what was going on and all four birds were busy eating both the ants and the pupae. Brownie soon shifted to other places a few feet away to continue digging operations and to make occasional trips to me for food for the youngsters. The latter continued with the ants for more than half an hour. Occasionally one would spring into the air as if stung by a hornet and scratch frantically, running away for a short distance making various comical evolutions to rid himself of his tormentor, but usually returned at once to the feast. Several time the youngsters came to me for food. As they get more active, they more frequently follow their parents a few feet for food. They like to stand in the bathing dish and peck at particles floating on the surface and lodged on the bottom. Brownie frequently feeds them while thus engaged. One of them adopted a very aggressive antagonistic attitude toward her for a short time and they exchanged lightning-fast blows at each other repeatedly, the youngster being the aggressor and Brownie blocking away. Whatever was back of it, it certainly looked like a fight, and Brownie was clearly excited after it was over, running about and climbing up and down the bushes--not a usual procedure of hers.

The youngsters' bills are now plainly showing the typical thrasher curve and one has to be careful to distinguish them from their parents, particularly Brownie.

(Another Brown Towhee nest today and also a Bush-tit's, making 7 for the former and 2 for the latter. This brings the total this year to date to 37)

June 20th At 6:45 I mixed some soft food for the thrashers. While I was doing this in the shop, Brownie began calling nearby,

using as an introduction the whimpering call of the robin. As I entered the glade, one of the young thr[illegible] the bushes toward me, but as I found that the wooden spatula was missing, I turned back to the shop for another one. On my return, the young birds had come all three of entirely out of the glade to the road and were waiting on the bank for developments. As I began to feed [illegible], [illegible] dropped down from the little pine where she was singing at [illegible], and [illegible] job over to her. When it was finished, the youngsters at once began tearing through the bushes after each other. Not once during this [illegible], everything had [illegible] and relieved her [illegible].

(Nests) Nest No.38. This is a California Brown Towhee's in a branch of an oak about ten feet above the ground. This makes 8 of this kind this year).

Brownie fights a yellow-bellied racer.

At 10:40 as I was dragging the horse to the south opening into [illegible], Brownie and three youngsters were there. Brownie [illegible] like a fox--a sure sign of something unusual [illegible]. [illegible] about a small clump of weeds, pecking into it occasionally and drawing back quickly. She did not seem very excited. I watched from a distance of about four feet and [illegible] that the object of her [illegible] was a [illegible] snake. [illegible] one close enough. One of the young birds also took a hand, but retreated after dodging a blow or two from the snake. The snake finally crawled away into a crack in the rocks and Brownie spent 5 or 7 minutes looking for it. She then came to me for worms and fed the young, who promptly gathered around. I then went up into the glade [illegible] for soft food, Brownie soon going back to [illegible] the snake had disappeared, making [illegible] for it. It was exactly 10 minutes after the first sparring match. [illegible] looking for it, I saw it coiled up behind her, [illegible]

in the open, about a foot from her. She did not discover it for some time, in fact not until I attracted her attention to myself, the snake being between us. She flew at it furiously with wings and tail spread and, for a few seconds, it was a real fight at close quarters, neither giving ground. The snake, however, quit first and made for the fence, with Brownie after him, fiercely raining blows upon him. When he got through the fence, Brownie was satisfied, immediately calmed down to normal, came to me for the worm which I offered as a reward of valor and then went on into the glade where she resumed feeding the young as if nothing had happened. It is to be noted here, that in the second encounter at least, the bird was distinctly the aggressor. The original combat was a thing of the past, and the snake had left the field and the bird had returned to peaceful pursuits away from the field of battle, but it had not forgotten that there had been an enemy near and deliberately went in search of it, and when it was found, delivered the first attack. During these two episodes, Brownie made no outcry whatever, did not ask for help, as the Spotted Towhees and Robins do, and collected no audience except a Wren-tit, which has a nest about ten feet away from the scene of the disturbance, and the youngsters who were there anyway.

Greenie gives youngsters training in self defense (?)

I was interested to note that Greenie's attitude towards the young birds, after watching them for the last 15 minutes or so. Greenie came into the glade about 2 o'clock so thoroughly soaked that he was almost black. When the young ones approached him, he repulsed them, then went off to dry himself. In about 15 minutes he was back again, sleek and full of vitality. He at once attacked one of the youngsters, who stood his ground manfully, and would not retreat. Greenie gave a splendid exhibition of sparring. He would advance to the attack, snap at the younger bird, retreat, advance, circle about him, fly into his face with his feet in advance of

of his body, peck and retreat again, all with bewildering rapidity and consummate grace of movement. I do not think, however, that he touched the youngster even once and I believe that he did not try to. The young birds are not slow, but Greenie is a streak of light compared to them. The young one fought back with his beak vigorously and glared at his parent with what looked like genuine hostility. Between rounds Greenie helped himself to soft food and then returned to the attack, but it was always he that retreated. Neither bird made any outcry ~~and~~ I think if any of Greenie's blows had landed they would have hurt. I could hear his bill snap at times. All of this was within, say, 6 to 10 feet of my chair. Greenie obviously made no attempt to drive the young bird away, ~~and~~ so I think that this was a sham battle, intended either as play, or as teaching the art of self defense, and self reliance to the young. It should be noted that his attack was never pressed to the point where it broke down the morale of his young opponent.

Without serious error, the young birds may be said to be 38 days from the shell, half of this time spent in the nest and half out of it. Brownie still feeds them at fairly frequent intervals . They also partake of food from the dish , dig and turn over loose objects and , when they feel like it, will take worms from my hand, but they are still not quite certain as to what they should do with them when they get them and often carry them around for several minutes before swallowing them. This characteristic started the third fight of the day--between two of the young birds. The bird with the worm carried it to another young one as if to feed it, the two standing facing each other, one with its mouth open and the other holding the worm as if about to deliver it. However, after posing this way for perhaps a minute, the worm was swallowed by the original possessor, whereupon there was a lively interchange of several pecks between the two birds, followed by the retreat of one

Two youngsters have real fight.

of them .

During the afternoon Mr. Kane visited the place with sixteen boy scouts. Brownie was busy on the nest, so did not come, but two of the young birds came out of the bushes in the glade and I fed them with the spatula in the presence of the boys .(The Wren-Tit on her nest was subjected to the scrutiny of 18 pairs of eyes in succession at a distance of about 2 feet without being disturbed).

June 21st. At about 7:45 A.M. I went to the glade. Neither parent was there but all three young birds appeared almost at once and came to me to be fed. They are beginning to show their individualities. About 9, Dr. Reynolds with Mr. and Mrs. Harris called to see the thrashers. As they came up the road, and we were exchanging salutations Brownie came out of the bushes and jumped up into my hand for worms, much to their delight. After a half hour or so, we went to the glade and Brownie came out of the bushes with her whole family and gave a good exhibition of feeding the young, getting worms from me, etc.

One chick develops parental attitude toward others adopting identical mannerisms.

About noon I went into the glade--both parents absent--and [illegible] of them is acquiring a parental attitude towards the others. It takes worms from my hand freely, now and then carrying one to one of the others, making the same chuckling sound that the parents made when feeding the young in the nest. It also steps partly in behind the bird to be fed, just as the parents often do and taps the prospective recipient on the head or back to make it "open up". It then holds the worm close to the other's bill, instead of thrusting it down its throat, waiting for the other to reach forward and take it; which it usually does. This is exactly as Brownie and Greenie feed each other and is different from the behavior noted yesterday. This morning on one occasion, the giver of the worm "asked" for it back again by opening its bill and crouching and, in its turn, reached forward and

gently drew the worm from the beak of the bird to which it had just [illegible], while the worm itself. [illegible] evident conflict of wills. This same bird, the one that is beginning to show the maternal instincts, is more precocious in its attitude towards worms than either of the others. It knows exactly what to do with them, takes them from my hand freely and even will take them out of the worm box as Brownie does. It also begins to look expectantly at the box on my knee, when I sit on the ground, and has shown an inclination to jump up and investigate, but so far has only stretched its neck and looked at it. They are not afraid of me, but are not always certain in their recognition of food. They are also now, this morning for the first time, at the finger pulling stage noted in connection with the parents'first few approaches to me, two of them having pulled my fingers and tapped at my hands in exploratory fashion.

3:45 At 3:30 I decided to investigate Thrasher Nest No. 4, so Julio held the ladder and I went up it. I could not see down into it, so had to feel. Greenie who was on duty, shifted to one side and I counted three eggs. He then got out of the nest entirely and sat about a foot away ~~and~~ so I had a chance to verify the ~~a~~count when there were not so many feet and legs in the way. Three eggs. ~~As seen~~ As I took my hand out Greenie went back in immediately, apparently without cherishing resentment.

7:35 P.M. Everything quiet in the Thrasher Glade.

Young birds are developing individuality.

It has been very interesting this afternoon to observe the gradual development of personality in the young birds and the appearance of characteristics in each differentiating him from his fellows. (Incidentally, if these birds are brothers and sisters, what is the relationship between them and the three eggs?)

I think the one that comes to me first is practically always

the same bird. It has the least conspicuous markings about the head. The ear coverts and superciliary stripe ~~are~~ contrast the least with their background. It comes forward with the most confidence and, I think, is the one that feeds the others. It is quite gentle, yet not without spirit. It is the great worm eater and has become quite spoiled, yet it occasionally offers worms to the more backward ones. When they were last fed, this one refused soft food offered on the spatula and knocked it off with its bill and did not pick it up. When a new supply was offered, it struck the stick repeatedly and violently and waited further developments without retreating . A third offering was similarly treated, but this time I held the spatula more firmly and, in order to make more impression by delivering a more powerful blow the youngster repeatedly stretched itself to its full height and struck downward with all its strength. It would have none of it. The moment I showed it a worm in my fingers, it took it immediately, but gently, and when I showed it the inside of the box on my knee, it climbed up at once, sat on my finger and dug out the worms. This one reminds me much of Brownie in the way it digs around me and pecks at things while keeping an eye on me for developments. This time, also, it discovered something interesting about the top of my head, just as Brownie did and showed symptoms of wanting to investigate. I am getting touchy about it! There is nothing particulary noticeable about its carriage. The second bird to come forward is less friendly and confiding and its markings are somewhat more conspicuous. It takes worms from me also, but not so freely, and has not yet been testy about the feeding stick, mostly ignoring it now. Its carriage and air are more alert and it is more standoffish. The third one is the lone worker and prowler, usually the last to come. He wants to make worm-taking dramatic. He is the largest of the three with the most contrasty markings and the lightest colored ear coverts and "eye-brows".

He is also the most graceful of the lot, the lightest on his feet and most alert. He carries his tail tilted up like a wren's when coming to me, with head high, neck arched, tail feathers slightly spread and forming a graceful bow longitudinally. He is most like Greenie of the three , very independent and dandified. I do not know which one is the singer, as I have not heard and seen this act for a day or so. I have the impression that it "ought" to be this one, but it is only a feeling in my bones without substantial reason to back it.

June 22nd. At 7:20 A.M. all the young birds came to me from the bushes with No.1 in the lead, the others following in the order of the preceding paragraph. No.1 did not care for soft food at first, but it did not bite the stick and was soon glad to have me poke food down its throat; after which I rewarded it with worms. When these ~~were~~ were withheld if fell to digging between my fingers and in the earth beneath. Brownie finally came and took over the job.

At 8:30 as I was strolling near the glade, one of the little fellows espied me and ran out to me. I gave him a worm or two and he was soon joined by his mates. Brownie then appeared from nowhere and after that it was impossible for me to hand a worm to any of the young birds, no matter how close, for Brownie would invariably intercept it herself and decide to which one it should be given.

As No.1 stood along-side me I tested his tameness by placing a finger under his breast, and pressing firmly upward to see if he would step up on it as young birds often will. He would not step up, although not frightened, as he did not retreat, but as the pressure of his feet on the ground lessened, danced around a little and talked. I feel certain that when these youngsters do not perform the acts I wish them to, it is usually not on account of fear, but either because of lack of incentive or of understanding. By acts I do not mean tricks, as merely wish to have them friendly and without fear of me, so that they will stay

here, if not against the rules of territoriality.

June 23rd. At 7:30 A.M. as I entered the glade, all three young birds came running out of the bushes to me. One of them was so hungry it was almost fierce about it--No.1 I think. It struck the soft food off of the spatula repeatedly, but, this time, ate it, and as I withdrew it, followed it up trying to break ~~it~~ the spatula to pieces with its bill in order, it seemed to me this time, to eat it. It ate soft food from the dish with great eagerness and needed no explanation of the desirability of worms as an article of diet. The two others were more shy, but all three joined in eating at the dish and in taking worms. While they scramble competitively for worms tossed to them, there is a curious trick they have of offering them to each other, the offer sometimes, but not always, being accepted with good grace. After this feeding period they tore about the bushes after each other for some minutes.

11:50 A.M. At about 11:20 two of the young thrashers were lying in the sun about 8 feet from me in the glade and about 4 feet from each other, with their bills open and dozing at intervals. One of them began practicing his undersong and kept it up for 5 or 10 minutes. It is improving and, while very low in volume, is ~~good~~ fair in quality and definitely thrasher music. Greenie suddenly appeared like a whirlwind and alternated sham attacks (as I now ~~know~~ think them to be) on the two birds. They defended themselves with vigor and stood their ground, each bird, while the other was being attacked, maintained a defiant attitude, crouched low to the ground with bill open. Some of Greenie's rushes were from as far off as ten feet, but I am certain that he did not strike either bird and he allowed himself to be repulsed every time. I tossed a worm or two into the arena occasionally to note the effect on the combatants; hostilities were immediately suspended each time and all of them rushed for the worm, Greenie always getting it and eating it

himself. [illegible] the ledge leading to the platform which [illegible] it. This is the first time I have seen [illegible] in their old nests. After that he went away without feeding either young bird. In fact, I have not seen either adult feed the young this morning. The one that sang is, I think, the one with the grace- [illegible] hand, so held it at increasing heights from the ground until it had to stand on tip-toes and partly hang by its bill on the edge of the box. Even in this position it managed to uncover the worms, peppering itself liberally from head to foot with bran in the process.

About 4:30 Dr. Grinnell and I went to the glade with the Doctor's copy of Ridgway's "Color Standards and Nomenclature" to see if it might be possible to check up on eye color, notwithstanding that the shadows of the trees were making the light conditions unfavorable. The three young birds came out of the bushes shortly and while the attention of one of them (No.1) was engaged by the worms which Dr Grinnell offered (and which the bird took from his hand) I endeavored to reflect light into its eyes with a mirror. A fleeting glimpse was tentatively classified (from memory only) by the Doctor as Sepia, Plate XLIX, although it was recognized that this classification must not be regarded as [illegible] on careful comparison with the objects. Curiously enough, the bird instead of being frightened by the beam of light, was greatly interested in it and tried to pick it up off of the ground as it shifted about. This bird, while being offered food, besides quivering the wings slightly as young birds do, also partly opened and closed them nervously [illegible] in a manner which one who had not had them under observation for long, might attribute to advancement. However, it is a movement which they make after taking a bath and is part of the drying operation.

to the [illegible] plan was primitive, taken in both. The reason for dwelling on this notion will appear shortly. In the [illegible] it was noted that this bird was the only one of the three that showed at the base of its tail what appeared to be either new feathers sprouting and still in their sheaths, or the base of the emerging tail-feathers from which the sheath had not yet been removed. After watching from Bernadey about 3:30 o'clock, I went to the glade. The three young thrashers appeared at once and then Brown-eyes, whom I had not seen off of the nest all day, and intensive feeding operations were then begun. It was noted that the appearance noted was not so conspicuous as it had been earlier. Close inspection revealed that the bare places were still there, but were partly covered by the tail coverts, which, in these young birds, are light and filmy and are easily displaced by the wing tips temporarily and, when wet may become displaced, I suppose, until the feathers are dry.

June 24th. At 7.45 A.M. I went to the glade, all the young appearing at once and very hungry. All of the tails are just alike at the bases, but glimpses of the bare stems at the base of the tail feathers may be seen in all of them, and if one blows on the tail coverts they are easily displaced and the appearance noted yesterday immediately follows. Hence, I assume, that the tail feathers are simply growing fast, and this reminds me that when Brownie's tail was well wet at the base after a heavy rain the shafts of the feathers were quite conspicuous and one could see right through her tail.

Since the first observation of today, I was absent until about 4.30, at which time I went to the glade and discovered that [illegible] two young thrashers that [illegible] "sunbathing", as I believe it is called. These two were about 5 feet apart, sitting in the Old Man sage , about a foot from the ground. The muscular effort required for so small a volume of sound is surprising and it

[illegible] these were not less than three feet away from the birds in each [illegible] enough, both birds were very sleepy, one of them just before singing had its head "under its wing" (No.1). A mowing machine cutting the grass in the ~~lower~~ field below took occasion to move into the immediate vicinity and I think its noise stimulated the songsters. No.1, identifiable at present by the fact that its superciliary stripe shows practically no contrast in color with its surroundings and does not project like an eyebrow, tried to sing, sleep and stand on one leg on the branch, all at the same time. This proved to be an impossible accomplishment. After the mower went away, both birds started singing (they had been singing at the same time) and came out to eat. No.1 was so tame when it jumped up into my hand and stayed so long digging worms out of the box that I could change my own distance and point of view from which to ~~examine~~ it closely. The outer tail coverts are very fine; a slight breath blows them aside and reveals the bases of the tail feathers and the skin in their shadow, although the shafting is not shelling off.

June 5th. At 8:30 I went into the glade and sat on a cushion. All three young thrushes came to me immediately, climbing upon my knees and arms. One of them in particular was insistent upon having worms from the box which I held on my knee. I could not identify this bird positively, but think it was No.1. His eye-color is changing, I think, as appears to be the case with the others--although I am not certain as yet. The one in my lap fought vigorously to get at the worms, which I would allow him to have if he could get them out between my fingers. He attacked every portion of me within reach, making long white marks through the tan on the backs of my hands [illegible]

clothes and pulled at the wrinkles. In the latter performance he almost cut off his own toes for some part of my clothes and nearly succeeded by pulling on it. The bill is, at present at least, much sharper than those of the adults and is even more formidable weapon than I had supposed from observations of the parents. The prying movement made with the bill, where the tip of the bill is pulled toward the bird, is surprisingly powerful. There was evidently no animus in the bird's "attack" on me, I was merely that part of the surroundings, which, if pulled apart, offered the best chance of disclosing a hidden food supply. No resistance was anticipated from me either, otherwise the bird, between periods of activity, would not have sat calmly on any selected portion of my topography and surveyed the rest. As with the adults, it appears to me that the young recognize the face as the place to be watched for evidence of the owner's intentions.

While all the young were grouped around and on me, one of the parents, I can not be certain which, could be heard "scripping" nearer and nearer, until finally it joined the group at my knee quietly. However, it suddenly began attacking all three, including the one sitting on my wrist at the time, with apparent fury--feathers ruffled, tail spread and wings half opened. I do not think that it actually struck any of them with its bill, although it did not knock one over. The young defended themselves, but did not retreat. After attending to each of them, the parent, without feeding any of them or taking any food itself, ran off scripping noisily. I think it was Brownie, but can not be sure. If so it is the first time I have seen her join battle with the young birds, although, the last day or so, she has been feeding them less.

Eye color

At about 10 o'clock I endeavored to check the eye-color of the young birds with Ridgway's charts. Stretched out upon the ground with Dr. Grinnell's valuable copy( which I note is autographed by the author

and which only a generous soul would entrust to a tyro to be used in the bushes) held carefully out of reach of the inquisitive youngsters, I managed without the assistance of the other three or four hands which I should have had, to get the little imps rallied round for the Great Endeavor. Considering that they were not aware of the gravity of the occasion and believed that it was simply another opportunity for eating, they behaved very well. As there were three of them, all in motion, it looked like a hopeless task . However, the boldest one was not very hard to match with the charts, as his persistence kept him pretty well in focus, and after getting him "calibrated" I could use him as a standard with which to compare the others. After doing this, however, I found I could get pretty fair direct readings on the others. I would say that the iris of No.1 corresponds to Ridgway's Brownish Olive, Plate XXX, and that all of them may be considered as having eye shades --just now--lying within the group : Brownish Olive, Olive, Buffy Olive and Light Brownish Olive. The differences are very slight. It should be noted that the Brownish Olive is the same shade as Dr. Grinnell's suggestion of Sepia, but is two hues nearer the green end of the spectrum in color.

If I interpret Ridgway correctly, this eye color may be regarded as made up as follows: Beginning with Light Cadmium , which is a yellow hue of the orange of the spectrum or an orange hue of the yellow of the spectrum lying nearer to the yellow than to the orange of the spectrum made up of about 47% of orange and 53% of yellow, addition of 58 % of neutral gray gives his Honey Yellow (Pl.XXX). Addition of 87.5% of black to this gives Brownish Olive. It will appear as if there were no green in this, yet, whether it be due to bias or other causes, Ridgway's Brownish Olive looks to me as if it contained some green. I do not know how his printer got his blacks, but ordinary printer's ink is commonly supposed to be based on lamp black or carbon

black --which are commercially different and may be technically different, although loosely considered the same--with linseed oil, a yellow soap and some other ingredients not essential to be considered here. Carbon black of high quality is decidedly a blue-black. Lamp Black often has a brownish tinge, yet a carton of commercial Lamp Black (at least so labelled), which I used in painting a machine in my experimental shop, by mixing linseed oil and turpentine with it a couple of years ago yielded a color which I have just now compared with Ridgway's charts and which is his Dark Greenish Blue-Green (Plate XLVIII). A high grade Bone Black also has a bluish tinge, so that it is easily possible that the green which I see in Ridgway's Brownish Olive and in the birds' eyes is there. Added to this, blue is usually actually added to ordinary printer's ink in the process of manufacture. The source of the blacks used in the actual printing of Ridgway's charts is not clear.

1:45. One of the young birds was up at the oval lawn. The other two were in the glade and came for food. Greenie flew overhead and they crouched in defensive attitudes. Greenie came down to the ground about ten feet away and they turned an d faced him hostilely. They wandered away and he attacked them, but they stood their ground. Greenie came to me very meekly for worms and then left. The young ones were more or less frozen when he was about, but thawed out when he left. One of them throws out my spatula just as Brownie does.

4:30 As Mr. Sampson and I sat in the glade earlier in the afternoon all three of the young thrashers were playing about us and two of them practiced their songs. About 4, after Mr. Sampson had left, an outcry arose from the Spotted Towhees, who have now brought some of their third brood into the glade, presumably to feed them more readily from the soft food dish which they are now using with the thrashers. Roughly the western half of the glade is covered with a dense growth of shrubs, and the western half of this again consists of an almost impenetrable mass of "sticky monkey" (Diplacus) which has lodged and is now a twistd

mat about 2 or 3 feet thick through which the ground can not be seen from above. Through it pass innumerable small tunnels and trails used by the birds and rabbits. This mat is 15 or 20 feet long and about half as wide. By looking down into it I could see the parents, several wren-tits, the young thrashers and some others. At intervals other birds would enter to see what the trouble was. Amongst these were linnets, purple finches, wrens, bush tits. In the branches above one robin, Lawrence and Green-backed goldfinches, chipping sparrows and one or more hummingbirds collected. As I could dislodge nothing by prodding into the mass with a pole, I finally forced my way through it, lifting the tangled mass aside, but could find nothing, the outcry continuing, and the Towhees and wren-tits remaining in the mat, and a hummingbird buzzed about my ears once. I suppose it was a snake. The turmoil subsided in about a half an hour. Many of the young of various birds were present and toward the end a Black-headed Grosbeak approached but did not join the hunt, though probably attracted by the event.

I have not seen either parent feed the young thrashers today and I have had plenty of opportunity. Also I have not seen Brownie off of the nest, unless it was she that attacked the young birds this morning.

Julio tells me that when I was writng the foregoing paragraphs immediately after the disturbance, he was watering the garden and saw one of the young thrashers and a gopher snake in the road near the glade and that the thrasher pecked at the snake several times and walked away. The snake coiled but did not strike and did not retreat. Following our practise here, the snake was taken by the tail, carried off some distance and liberated.

About 7 P.M. the glade was deserted by the thrashers, the food dish being empty. Search disclosed all three young birds hunting

for their last meal of the day in and about the berry patch and the lath houses and Brownie digging by herself some distance away. One of the young thrashers flew down to me from the top of a small lath house and the others finally gathered around me for food. Brownie came and showed hostility toward them, attacking one so strongly that it flew up into a pine tree. She did not feed any of them. I think, therefore, that this morning marks the beginning of Brownie's decision to leave them more to their own resources, although at about 7:45 she did exercise some supervision over their selection of roosting places and repelled a few intruders.

June 26th, At 7:45 A.M. all the youngsters gathered about the dish of soft food which I placed for them in the glade. One of them does not seem to be so strong as the others. The cheeky one (Tom) jumped up on my knee for worms and when I pressed upward on its breast with my extended forefinger to make it jump up on it, responded readily. It was almost impossible to give worms to the others as this one repeatedly intercepted them and did not offer any of them to its mates as on earlier occasions.

11:25 ( I notice the little bathing pool in the upper court is muddy. This has always meant so far that robins are nesting. Yesterday there was a new batch of spotted young robins about. I do not know whether they are from Robin Nest No. 2. If so, perhaps these birds are building a third nest. I notice also, what appear to be fresh scars in the Helixine (?) surrounding the pool. If they are fresh, it means robins getting mud).

About 12 M. while the young thrashers were eating from my hand, one of them walked up my sleeve to my shoulder, pecking all the way. As I was expecting a tap on the back of the neck, a robin flew overhead and the youngster made for the bushes.

7:30 P.M. The young thrashers, at roostig time are without parental

protection or support of any kind, for the first time in my observation. Also for the first time one of them went outside the fence. Brownie, again, this afternoon refused to feed them in the glade with food taken from my hand and trampled on one of them pretty roughly, at the same time pecking at it, although I do not know whether the blows landed or not as there was no outcry. The youngster did not run away, but remained at the spot where it was so rudely treated and watched as its parent run off , it seemed to me , with an injured air. Clearly the young have little more to expect from their parents in the way of favors. They certainly have not been a source of much trouble as young birds go. They never tagged after their parents from the first begging for food as I expected they would do, after the fashion of most of the young birds I have observed. Now that the parents no longer feed them, Brownie and her mate do not come to me for food so often, in fact do not hunt for me at all now.

June 27 th. At 8 A.M. only one of the young birds, No.1 came to me for food, and neither of the others could be found anywhere. No.1 is an extravagant creature and throws the soft food out of the dish, picking up only a small portion of it. It has as powerful an aversion to the wooden spatula as Brownie and not only throws it out, but will follow it up at times and throw it still farther away. In eating soft food out of my hand, the young birds are much rougher than the parents and do not hesitate to pinch me in the process both intentionally and accidentally.

9:15 At this time two of the young birds came out to eat. These were No.s 1 and 2. No.3, the cocky one has not been seen this morning.

11:15. I went to the glade--no birds there except wrentits, one Vigor wren, two song sparrows , several brown Towhees. It looked to me as if the young thrashers would not appear. Finally, however, one came from some place outside of the glade and shortly another, as I was begin

[illegible] to think they might be gone for good. Both were very friendly, especially No.1, and very hungry. Brownie then appeared rather quietly and immediately ran over one of the youngsters, aiming what I think was a feint [illegible] it [illegible]. [illegible] my arm and my hip as I sat on the ground braced by one hand. From this point of refuge it glared at its mother with open beak, both young ones turning to face her like weather-cocks wherever she went. She ceased her attacks and pecked about in the vicinity, glancing occasionally at the young birds as they were again taking food from me, without showing further hostility, so I do not think that the matter of jealousy enters into the picture. On invitation, she jumped up on to my hand, taking all the worms she wanted for herself, the young birds going behind me while she was there, and then went to singing about 10 feet away, my third young bird came from some place or other and ate from the dish at my side. Brownie paid no further attention to any of them and they gradually divided No. 1. however, for a few minutes to climb up on me without invitation, nuzzling and pecking with its slimy bill. While it was directly under my eyes, I noticed something about the size of a house-fly on its back, with wings like a fly, but the general tone was almost exactly that of the bird's feathers. It was flatter than a common fly and looked rather like a tick but with wings. As I watched, it crawled under the bird's feathers and disappeared, coming out again at another point and then crawled under again. I looked for signs of distress on the part of the bird, but there were none as long as it stayed with me.

2:30. As I entered the glade all three young came out of the bushes for food, and then Brownie. She ran at one of them, stopping short [illegible]

[illegible] considered no. Nevertheless they kept their eyes on her.

Dr. Grinnell and his party are due about 4:20, so I have the problem of regulating the food supply. If I give them too much, they may not put in an appearance, and if I do not give them enough they may stray off somewhere. I shall not be able to show Brownie feeding the young, even if she is there, as she no longer does it.

7:30. Dr. Grinnell and his party, consisting of Miss Anderson (?), Mr. Linsdale and Mr. Sumner arrived about 4:30. All of the young birds and Brownie cooperated (unknowingly) in entertaining the visitors, taking food from their hands, Brownie jumping up in Miss Anderson's invitation [illegible] worms from the box which she held.

Time 8P.M. At 8 P.M., as I entered the glade, there were no thrashers in sight. When I called, one of them answered and flew into the glade and then [illegible] into the glade, the others followed shortly. (Incidentally I showed Dr. Grinnell and his party the dark greenish blue-green of the bolt guard on the emery wheel).

Brownie appeared once or twice in the glade during the day and took food from me, but did not bother the young birds. These latter were about all day, although sometimes going down into the chaparral on the slope outside the fence, which they appear to like. One of the young birds is much tamer than the others and often flies up into my lap. At one time it looked as if it intended to take a nap there. Brownie saw this some one in a bush about six feet from the ground, climbed up to it, spreading her tail and wings and dancing about a little, but aimed no blows at it. Later, on coming off shift (7:10 P.M.), she saw me in the road when about 150 feet away [illegible] and the glade, along a path leading toward the eastern line of the [illegible] where I could see nothing to attract her especially, but

began digging in desultory fashion. As far as I could see, she ran with no particular object in view, about 100 yards, doing practically nothing when she reached her destination--another human characteristic, particularly American.

June 29th. About 8A.M. when I entered the glade with a fresh food supply, there were no young thrashers in sight. All three, however, soon came from various directions to eat soft food from the dish, the tamest one requiring worms very soon. With one of the worms in its bill it started a game of tag through the bushes, chasing the other two . This seemed to be the wrong way around. When I tossed another worm into the chase, this same bird got it and continued to be "it". This kept up for several minutes, at the end of which time they quieted down, the same bird still had the worms, which it then proceedd to gulp down in one swallow.

About 10 Brownie came off shift, went to the glade for soft food, came out of it to me for worms, then up to the berry patch for a bath in the Indian mortar. The water in this is deep, so she got a good soaking, then went up into the lower branches of a pine to dry, about 15 feet from me. Knowing that they like to dry themselves on the groud in the sun and that Brownie seems to like company, I selected a spot nearby which was just the kind she likes and sat on the ground awaiting results, without calling or displaying food. As I had hoped, but did not really expect, she dropped down at my feet and for the next 15 minutes or so dried and preened from two to six feet from me. After everything was dry but her tail, she jumped up for worms and then went about her business. During this time no birds came for fruit from the berry patch, but within a radius of 25 feet from me during this interval there appeared the following birds:

Several Wrentits,
Two Green-backed goldfinches gathering nesting material,
Four Anna Hummers, two being juveniles whom their parents were feeding,

One adult Robin sunning itself on the ground and which stayed there all the time,
One Allen Hummer,
Two Flickers,
Two young Thrashers, also Brownie,
One or two Vigor Wrens,

Most of these birds ~~were~~ seemed to have nothing especial to do and I got the impression that the time and the place were considered favorable for resting. When I left the young hummers were still sitting quietly on the same twigs. They are full grown, but still like to be fed. The food is rammed down their gullets very thoroughly by their parents.

About 1:30 I went and sat in the glade "on the small of my back" in a chair with my legs crossed, which brought the left knee, owing to the slope of the ground, level with my chin and 18 inches away from it. I crossed my hands in my lap and waited to see what would happen. There were no thrashers about, but spotted towhees and song sparrows were coming to the food dish near by. This note is concerned with the thrashers. I did not call, had no food with me and offered no inducements to visitors. Within perhaps five minutes, No.2 came from some place behind me, came directly to me, sat for a few moments on the foot that was on the ground, then proceeded to investigate food prospects in the glade, without going to the food dish. Shortly after, No. 3 came prancing in from another direction, with tail erect and slightly spread, stepping high and lightly. He went at once to the same foot and began tapping it with his bill, then fell to peering down holes and digging near at hand. Almost immediately after No.1 came from the outside, flying up to my knee at once and sitting there quietly, but looking me over pretty thoroughly. It seems to have the flattest head. It then walked down into my lap and pried about my hands without pecking them. Next it tried the various buttons within reach on my coat, pulled at my necktie, swept it to one side until it could get at my shirt which it proceeded to pull, then tapped me on the chest vigorously. After that it walked up my left arm, discovered the

case of my glasses in the outside coat pocket and pecked it thoroughly. Discovering that my higher altitudes were still accessible, it went up to my left shoulder where it reached behind my ear and tried to get hold of the bow of my glasses. It came down from there and sat on my folded hands in my lap, pulled my cuffs and prodded up my sleeve as far as it could reach. Evidently I was impenetrable, so as it was a nice comfortable place in the sun and looked safe, it decided in favor of a rest, so it lay down on my hands and had a number of short naps, rousing at intervals to touch my hand very softly in different places with its bill and occasionally stretching to its full height to look over my knee to see what Brownie, who was now in the glade, was going to do, only to sink back again luxuriously. Finally it got too warm and had to open its bill to cool of and was threatened with an attack of "sun-fits", so it left to join the other birds after being with me fully ten minutes. All this was entirely without invitation and with no showing whatsoever of timidity. When this bird joined the others, there was some chasing about in the bushes which Brownie initiated, but it looked to me as if it were all in sport. It should be added that I talked to the youngster while it was on me and made no special effort to keep from moving, in fact did I expected to receive a peck or two on some part of my face, as the bird examined it in embarrassing detail and was within easy pecking distance most of the time, but nothing happened.

Although these young birds are now 47 days old, as an average, there are still to be seen here and there occasional loose floating flecks of down. At a distance of twenty feet or so it is almost impossible to distinguish them from their parents. Their tails look to be full length. Their bills are still shorter than those of their parents. They still make the glade the general rallying place. When Brownie's tail coverts are wet the quills of her tail feathers are conspicuous at the base also. After somewhat more than

4 months of nest building activities, laying, incubating and feeding young it is somewhat surprising to me to see the plumage of the adults in such good condition, although they spend a good deal of time on it when their various necessary activities will permit.

I have not seen any of the birds, old or young, eat fruit of any kind. They have had plenty of opportunity to get it on the trees and bushes and I have offered it to them repeatedly. In the latter instance, they have merely turned it over with their bills.

By this time, if these observations were consolidated, they would probably aggregate ~~several~~ many thrasher-days, and in all that time I have yet to see any thrasher use a foot in digging or scratching the earth or moving any object whatever, except that it does scratch itself, of course, and in stretching out a wing toward the ground as birds do, it will use a foot to push out the wing to its full extent--also as other birds do.

Again today I noticed the fly crawl under the young bird's feathers and disappear without re-action from the bird.

About 4:30 I took a visitor into the glade when I was not properly equipped with food, and as luck would have it, all three youngsters ran to my feet at once and one of them flew up and clung to my arm as I stood there.
I had to call to Julio to bring grub at once so as not to disappoint them . During this period, Greenie appeared and the young birds took refuge behind my chair and watched him for a time, then emerged to find that he was not really savage. For the last two or three days, the parents have ~~not~~ eased up on their hectoring , but the youngsters are not quite certain of their good faith. They do not tease for food and are not offered any.

June 30th. About 8 A.M. I went to the glade; not a thrasher in sight and no indications of their presence. After whistling and calling, the young ones began to appear until all were present eating from the

dish at my knee where I sat on the ground. One of them jumped upon my knee and [illegible] and I allowed him to [illegible] worm between my fingers. Another took a good bath less than three feet away and, while it was bathing, the third one picked globules of water off of the bather's feathers. After this a good romp was in order, then the bather dried himself in the nearest "Old Man"sage, the two others stretched out on the ground side by side and three feetfor so from me, dozing in the warm sunshine. A spotted towhee, seeking food for its young, and who makes this dish a regular calling place, tried to work up enough courage to take food from it within arm's reach of me, but could not quite do it. This went on until one of the young thrashers drove him away.

At about 9:30 the young thrashers were at various places in the orchard from 200 down to 100 feet from the glade. They were interested in me, occasionally approaching me, but not caring for me to get too close to them. I went to the glade and they appeared one at a time and played about, occasionally eating. No.1, who properly should be called either Cheeky or Sloppy--it's about a stand off--seized the occasion to prospect around in my lap, finally adopting it as a preening station and giving himself a thorough going over. Greenie appeared shortly and chased all of the young birds away in the most persistent effort I have seen him make to date. They did not attempt to stand up to him but ran with what legs they had, dodging and flying, and all disappeard; In about ten minutes every one of them, except Greenie, was back again to eat, examine my shoes, dig and bathe. Brownie then came and started for one of them who slipped underneath a California Bee Plant and, at that moment I distracted Brownie's attention with a worm, so she came to me instead and forgot all about the youngster, had a good meal of soft food and worms, then disappeared. Not until then did the young birds come out again from the bushes where they must have been watch-

[illegible] my feet for a short rest, when it [illegible] I [illegible] my shortness and by my [illegible] I [illegible] my lips when I call [illegible] ing out this is [illegible] to scatter as much of the soft, damp soil gravel material as possible from the deep dish over my newly dried clothes, then rounded the pool full all over them. During this time a Gnatcatcher on the ground about five feet from me in one spot eating crumbs of bread left [illegible], which it carried in by tiny mouthfuls. A fiber or [illegible] was sticking out of the bird all this time (about 5 minutes) but it did not seem to mind. The thrashers' [illegible] the glade is now regularly used by both kinds of towhees, gold [illegible], mockingbirds and Wigor wrens. All of these birds use it in my presence.

(Nest No. 7?. This was located several days ago--a mockingbirds in the chaparral. The young are fed from the thrashers soft food dish. Nest No. 19. Just found by Julio--2.45 P.M. A quail's nest with three eggs in a Lolli-Anthemum almost in the middle of the upper court. The place has been watered regularly. The female was on it.)

This morning there was a flock of half grown young quail with their parents in the glade about ten. The parents were very vociferous for nearly an hour. This disturbed the young thrashers and Brownie considerably, but they made no effort to dislodge them. Young quail were seen by me in this vicinity last month. (I.e. in this part of [illegible]).

[illegible] it. It then settled down into it like an [illegible] and remained there for about ten minutes. I do not [illegible] how long it would have stayed, for in my eagerness to

observe what it was doing more closely, I [illegible] out. This was No. 1 bird, alias Cheeky, alias Sloppy; the same bird in which I thought I noted maternal solicitude some time ago, as shown in these notes.

6:00. A few minutes ago there were no thrashers in the glade, but Cheeky came from an unknown location out of sight to fly up into my [illegible], having first flown into my face from a branch about six feet [illegible] there. I had on no hat and was entirely in white, and this [illegible] to the bird.

At 6:30 the bird incubating in nest No.4 stood up and examined the eggs carefully and seemed to be moving them with its bill.

July 1st. At exactly 8:05½ I sat down in a chair in the glade. There were no thrashers in evidence. Whistling and calling brought no response until at 8:10½ there were the sounds of a pursuit terminating in the bushes near me and I caught a glimpse of it. Brownie then stepped out and came to me for food, but not staying long; she seemed to be searching for something. At 8:18 a young thrasher that I took to be No.3, Cocky, came out warily, but also took food from the dish and worms from my hand. At 8:22 he climbed up the ladder to the platform, thence to the nest, settling himself in it as if he meant to stay there. I moved my chair so as to be able to watch him. At 8:27 Brownie or Greenie--I think the latter--came for food and at almost the same time, another young thrasher which was promptly chased out before it could get anything to eat, both birds disappearing completely. At 8:32 Cocky got out of the nest and sat on a branch 3 feet from it and on the same level. At 8:38 he was still there dozing. (I can not be sure this was No.1)

10:30 It was not until 10.o'clock that the young birds were undisturbed long enough for any of them to venture into the glade again with any degree of assurance. Up to that time it had looked as if one or the

and dozing, although it was more than usually alert to all sounds. About 10:15, No.1 came in from the outside boldly and flew up into my lap at once, where it proceeded to make a mess of things. It was not until this time that No.2 decided to come out and eat. Something alarmed them after about five minutes and both left.

I did not go into the glade again until about 12--no thrashers there. Greenie came soon, caught a yellow-jacket, which he ate after careful preparation, then came and ate soft food from my hand with very little coaxing. He hung around more than he has been doing for some

[illegible]tion (about 5:3[illegible]). This bird had shown no [illegible]terest, [illegible]ls, buttons, [illegible], [illegible]ut [illegible]ould [illegible]ow [illegible]y [illegible], [illegible], [illegible]'s "chewed"), my ears and teeth. I [illegible] will [illegible] over and over and at last got the thing I was on guard against--one [illegible] in the corner of my eye, though not a bird one. This bird was particularly interested in my ankles, climbing up on it so that its back was against my shin and pulling hard on it. When it noticed to my mind to sit a while I teased it with my fore-fingers to see if it would fight and it [illegible] into the game at once. When a second bird climbed up to see what was going on, the first one, which was cheeky, chased it off, following it into the bushes.

July 2nd. At 5:15 A.M. I went to the glade, the earliest visit I have made. Everything was quiet there, but Cheeky came very quickly to get food from me. As I was due elsewhere in 15 minutes, I did not wait for further developments, and made no further observations on this date.

July 3rd. Julio said that he had not seen the young birds in the glade yesterday at all, that they would not come to him and that he thought the old birds had chased them away. He understands that I am hoping to circumvent such action, though doubtful if it can be accomplished. I went to the glade at 8:40 A.M. I could hear one of the young birds practicing singing not far away. Brownie came first, very friendly. Often when she has not seen me for a day, she is somewhat shy. The youngster that was singing entered the glade and was promptly chased off. [illegible] and [illegible] [illegible] [illegible] and [illegible] [illegible] [illegible]

did not see them. They now had an hour and a quarter until 12:15 of doing just what they pleased--as it turned out. They were perfectly at ease and very friendly with me. Besides their usual pandemonium, one of them gave a good exhibition of the adult thrushes habit of digging and singing its undersong simultaneously. At the end of the period, Cheeky was hammering the worm box in my lap, No.2 was trying my shoes and resting of my foot, Jocky was doing sun-fits about 6 feet away, when Brownie burst upon this idyllic scene like a Fury and proceeded to alter the entire stage setting.Cheeky jumped to my shoulder and then up into the trees; No. 2 leap-frogged from the ground off of the top of my head; Jocky was paralyzed with astonishment and stayed more or less where he was while Brownie chased the others furiously in and out of the glade, through the bushes and trees, until on spotting Jocky, he was added to the pageant. Brownie meant business but she did not actually overtake any of them although she made one of them cry out in fear as he passed like a meteor underneath my chair. It seems to me that I was the focus of all this turmoil. On one of the rushes in my vicinity I thrust my arm , as nearly as I could, between pursuer and pursued in order to put a stop to the affair if possible. Much to my astonishment Brownie, instantly--she did not have at most more than a very small fraction of a second in which to make the decision and the physical execution of it--jumped out of the direct line of pursuit on to my hand, assured herself there were no worms there, and continued the pursuit. This happened twice in exactly the same way each time. Both times she was going at top speed; both times my movements were made as fast as I could make them and though she was undoubtedly angry at the young bird--not more than three feet in advance of her--there was not the slightest manifestation of enmity on with me. Evidently my two-counter feeling plan is not having the desired effect. In my case, however, the adults are going to have a job on their hands to keep these young birds away from the [illegible]

counter. If their minds were not so simple and clean they might take a leaf from the strategy of the higher human animal and stir up dissension amongst their offspring. Their troubles would then be over.

From progress made to date I am inclined to the belief that the ultimate break-up, when, if and as it occurs will come through the natural tendency of each of the young to assert its own individuality. If the parents do not drive them off--and I now think that the skirmishes witnessed can no longer be considered as mere training--it would seem that the young will eventually draw apart themselves purposely. There are no visible signs of this at present . While they are separated from each other most of the time, when they do get together they agree well. For example, they lie side by side often, peck each other's feathers and one of them, at least, still shows an inclination to feed the others.

4:40 I have seen three raids this afternoon in the glade, or contemplated raids,as some of them were frustrated. Two or more of the young birds have been there a good part of the time, returning rather quickly after the raids, when driven off. Brownie has been the offender each time. In the first one the young birds hid themselves when they saw her coming and I distracted her attention with worms. The second time one of the youngsters was sunning himself in a quail's dusting hole and bolted under my chair when she rushed him. The other of the two present was only 18 inches from the first and made himself less conspicuous by crouching down and not stirring. Again I bribed Brownie with worms which she took to the nest. The third time she dashed into the sage where they were and they fled. As she emerged I exhibited worms and she forgot the raid, but came to me with a feather sticking to her bill, so evidently she "landed" that time. She gathered and prepared four worms and went off in the direction of the nest with the feather still sticking to her bill. This act of laying the worms on the ground and beating them about duplicates her per-

formances when the first batch of youngsters ~~were~~ now still very young. As they grew larger, as shown in these notes, "preparation" of the worms ceased. It is now (today) renewed for the first time. I neglected to note in connection with this morning's last chase that feathers were also "drawn". Brownie has a broken wing feather now and it seems that this business of tearing through the bushes after birds as big as ones self has its hazards.

5:10. I have just inspected the contents of nest No.4. Greenie was in it and would not get out voluntarily, so I put my fingers under him and lifted him out. I wanted to use a mirror so I could get visual evidence, but Greenie insisted upon sitting upon my hand and obstructing the view. However, his feet and legs, being on the back of my hand, were readily accounted for and I had no difficulty in segregating three fairly big, fuzzy lumps in the bottom of the nest, so that there can be little doubt of another perfect score. Greenie pecked the back of my hand a dozen times, but they were very light taps and,as I withdrew it,took the end of one finger in his mouth, plumping down into the nest instantly. A very fine bird with courage and forbearance. Julio, who steadied the ladder, is more impressed with the birds' allowing themselves to be fumbled under, than with any other of their characteristics. He admires them immensely.

July 4th. ,7:35 A.M. I searched for 35 minutes for the young thrashers, but could not find any of them. The parents must have made a very successful effort earlier this morning. At 7:00 neither of the parents was on the nest (No.4.). I called and Greenie appeared, going directly to the nest, then Brownie answered from some place hidden from view and shortly got worms from me, which she fed to the nestlings, Greenie going off foraging in the canyon to the west, Brownie remaining on the nest.

8:40. At 8:15 I went to the glade to see if it might be possible to put the brakes on to the centrifugal influence of the parents.

No.2, whom I am now definitely able to identify as the great daylight sleeper of the trio--the one upon whom it has been most difficult to place a personal characteristic--was the first to show up. He has become a good "scripper" and talker and his song is getting more volume. He was very busy digging and singing, but finally came for worms which he collected until he had four in his bill. For a long time I was uncertain whether he was Greenie or not. At this particular stage, I thought he was. He even laid the worms down carefully and prepared them, talking all the time, and in every way acted as if he were going to take them to the nest, except after being plainly at a loss for some one to give them to, gobbled them himself. After this there was nobody to play with and he played hide and seek with himself, then selected a convenient twig and dozed fitfully. Sleepy is a good name for him. After a time Cocky came dancing up behind me, dramatizing as usual the taking of worms from my hand. He did not see Sleepy so he played hide-and-seek solitaire for a while. Last to come was Cheeky--formerly the first--from the chaparral, jumping up to my knee at once and scraping the worm box empty of everything, including the bran. As he went to find a soft place to lie down on a humming bird buzzed over his head and he actually flew up into the air to catch it as if it were an insect--without success. All of the young birds are now strong and lusty and it is no longer possible to tell which was the weaker one previously noted.

As I shall be absent the rest of the day, this effort will have to be my last one in opposition to the parents for the time being.

July 5th. At 8:00 A.M. Sleepy and Cocky came promptly for food. Both were full of spirit, tearing about through the bushes in a game of hide-and-seek, pecking at everything and pulling twigs. Cheeky did not appear during the few minutes I was in the glade, but Brownie did, plainly more concerned about food for the nestlings than about the presence of members of her first brood. These merely avoided her,

although she did make some show of driving them away.

A little later I took position near the 4th nest and Brownie was very active in feeding the young with worms which she got from me, while Greenie was ranging farther afield. On one of Brownie's returns to the nest from one of her foraging expeditions, I called her over to me to see what she had in her bill(by showing her meal worms) and it proved to be a large cut-worm . From there I went to the glade. Cheeky and Cocky were the first to put in an appearance, the former beginning proceedings by landing on top of my hat (which was on my head). This attracted Cocky who came running up and crouched as if to fly up also; but Cheeky who was having a good time up there pecking about, did not approve and made harsh noises at him, so to console Cocky, I gave him worms, Cheeky coming down to my lap for his share. During this period Cocky was seen to dash at something in a blossom of a Bee Plant (Scrophularia Californica) and back hastily away. He then pecked several times at some object that had been knocked to the ground, backing away hastily each time. It was seen to be a yellow-jacket, which he eventually ate. How did this young bird know that yellow-jackets are dangerous? Brownie then came, after the young birds had retired into the bushes, evidently looking for me, as she jumped up on me at once and searched for the worm supply, but it was temporarily exhausted. She could not believe the bad news for some time and alternated between the ground and my lap in her search, then up to a branch where she scrutinized me from above. When this brought no results, she compromised by chasing into the chaparral one of the youngsters that had incautiously revealed himself. As noted, I have been trying to shift the feeding center for the adult birds to the vicinity of the oval lawn, 200 feet nearer nest No.4. Accordingly I got a new supply of worms and went there. Greenie, who has been very inconspicuous the last few days, was the first to note the change and crept up

(At this point I had to go to the "office" to get more paper. As I [illegible] through the upper court I saw Greenie down below on the oval lawn. I called to him and he ran and flew up to me, making six trips to the nest with worms. On his fifth he brought a small green worm which he placed carefully by the worm box, which I was holding in my hand, taking back with him meal worms instead. I added this worm to the meal-worm supply to see if he would take it on his next return, but he ignored it, so I suppose it must be regarded as a present!)

to me very shyly, taking but one worm to the nest. On each return he got a little bolder until on his fifth or sixth return he was digging them out of the box. When Brownie came he did not return for more worms. (Chronologically this precedes the foregoing parenthesis about an hour)

July 6th. At 8 A.M. I stocked up my portable worm supply and sat on the steps near the oval lawn, thinking if I could get her new [illegible] well fed before I looked up the first brood, there would be less liability of her following me to the glade and chasing out the members of it. Brownie soon [illegible] over from the vicinity of nest No.4, making 9 or 10 trips back and forth. That seemed to settle the food question for brood No. 2 for the time being, so I went to the glade only to find nothing resembling the young there. Brownie, of course, had to come again and while she did not want any worms at the moment, I imagined she took some satisfaction from seeing the glade empty. I could find no signs of the first brood on my return to the vicinity at 11.10 at which time I made visit to the glade. I made [illegible] about a dozen, but I would give her no worms, so she left to [illegible] I made her visit at all the [illegible] left shortly, but [illegible]

[illegible] down her throat. I then noticed that the tail parts were not being [illegible] miraculously in the last minute (evenly is getting [illegible] ) and it occurred to me to look at the eyes. It was Blacky!

Each brood shows the stage in their development reached by the first brood. Cheeky seem natural to the aboriginal outside the fence while their young live with. The multilingual movement seems to be at present, at least, controlled by a more powerful force than I am able to exert [illegible]ly.

During the rest of the day I was able to feed the young three times in the [illegible] only at such times as Brownie was busy elsewhere. One of these [illegible] all, one only [illegible] Cheeky four times - that is, of course while I was [illegible]. [illegible] Brownie in her nest and they drove off any young birds that happened to be there, [illegible] at various points where I was working in the garden and when I had my worm stock handy, made repeated trips to the nest. To me they would often bring with them whatever they had picked up en route--usually cut worms. In taking worms from the box or from my hand they do not drop whatever they have in their bills, usually. I tried out Brownie again on angle worms at a time when she was very anxious to get food for the nestlings, but she would have nothing to do with them.

July 7th. At about eight Brownie came up from the oval lawn where she saw me in the vegetable court, to get food for the young. When I [illegible], [illegible], [illegible] light on the [illegible], [illegible] [illegible], I

(Number duplicated by mistake)

left.

12:30. I looked in at the glade several times during the forenoon and sat there for several minutes each time; but there was no sign of any of the first brood. Both Brownie and Greenie came to me frequently for worms at other points in the garden. I was trying to induce Brownie, about 15 minutes ago, to take pills of soft food to the nestlings instead of worms, when she chased, overtook and killed a small blue-bellied lizard about 3½ inches long. This she mangled on the ground and then tried unsuccessfully to pick up the tail, which was wriggling about independently, at the same time that she held the body in her bill. It is strange that these birds with their powerful legs and feet will not even attempt to hold an object which they are breaking up, with their feet, but, as a result, throw it all over the [illegible] several feet. When the lizard was properly limp, Brownie started for the nest, Greenie, who wanted very much to get hold of it too, and I, joining the procession. It did not look possible for one small bird to swallow an object of this size, but it was done, nevertheless, while I watched from the ground. I then got a ladder and Brownie allowed me to feel all about underneath her, but there was no lizard.

Twice this afternoon when one of the birds of the first edition was approaching me for food, Brownie appeared and drove it away fiercely and although she did not seem to strike them, they uttered cries of fear. They are afraid to enter the glade now and if one of them does it is very wary. On the relatively few occasions when I see them now, they do not appear to be afraid of me. Their parents appear to be the worst enemies of which they are aware. I saw but two of them all day, (7:15 P.M.).

As I was talking to a visitor who was seated in an automobile near the oval lawn this afternoon, I was tracing a diagram on the palm of one hand with a finger of the other and Brownie, whom I had forgotten

all about, although I knew she was snooping around the vicinity, suddenly flew up on to my hands and looked for worms.

7:35 Brownie has just been getting worms from me at the front steps, and Julio reports that one of the young thrashers came to the glade while he was there less than five minutes ago and jumped up into his hands. Brownie missed this chance!

( The young quail are now being brought by their parents to roost in the oaks about the house. The first broods were seen here in May this year).

As I have repeatedly shown visitors, the thrashers at this' place do not seem to concern themselves about making distinctions between persons, as long as these persons behave in the manner to which they are accustomed. Thus they will go to anybody who offers food, if they want food and like the kind of food offered, provided they are not alarmed by sudden or rapid movements or persistent movements towards them. They will invariably retreat when one moves from a standing position to a crouching one, unless the shift is made extremely slowly. In fact almost any movement of the body causes them to retreat first, even though they approach immediately afterwards. If Brownie is sitting on one of my hands and I hold the worm box in the other, say a foot away, and she is considering jumping over to it, but is hesitating for some reason, if I move the hand on which she is sitting toward the box she will usually jump either to the box or to the ground, usually to the ground and then up to the box. But if I do not move that hand, moving the box toward her instead, she may wait for the box to get near enough to pick worms out of it and remain on my hand, or she may jump to it as it approaches. It is unsafe to generalize with any degree of positiveness as to what these birds will do under any given set of conditions. I think they like to be talked to and I get the impression that if one keeps

silent too long they are inclined to become restless as if fearing that some covert act were being prepared. Certainly they are not frightened by the human voice at all, no matter how near it is to them. Of course, although I have not tried it, a sudden war-whoop uttered right in the ear of one of them would probably cause a panic, yet I have repeatedly called to some person 50 or 100 feet away, with a bird sitting on my hand, and not alarmed the bird. Brownie and Greenie will both come when called, if they feel like it, but if they do not feel like it they ignore one absolutely. There is also the opposite condition, where from their demeanor, it is patent that they want to come but do not know whether they will be welcome. At such times, especially with Brownie, a spoken word or two in an ordinary conversational tone will often bring her trotting over with almost pathetic eagerness and sometimes with little cries announcing her coming. They are not singing now at all and not even calling each other, although they talk a little occasionally. Greenie still creeps up carefully ready to bolt on any pretext. Brownie, however, is usually bold. She gets many times as many worms from me as he does (all of which go to the young) on account of this, and although Greenie sees all of this he can not overcome his inhibitions, being often forced to beg her for a worm to take to the nest in order, I suppose, to save face, or perhaps, really to help. The adults will go to almost any length to get food for the young and incur, what for them, must be considered great risks.

July 8th. About 7 this morning as I looked down from a small second story porch connected with my bed room, I saw Brownie at the feeding station at the oval lawn. As I wished to see if she would come up there where she had never been before and whether she would be afraid of me clad only in pajamas, I spoke to her without raising my voice. She located me at once and headed for me across roads, paths and shrubbery, climbed up the trunk of the nearest tree and worked out to the

end of the branch nearest me (about 3 feet away) but it was not firm enough for a take-off, so she tried numerous others until she found one enough higher than the coping to enable her to drop upon it without much of a preliminary push. She then made several trips back and forth to the nest with worms.

About 8 I went to the glade--no young birds there--but Brownie came and, curiously enough, gathered a cargo of soft food which she carried 225 feet to the nest, instead of coming to me for worms. As previously noted I have tried various expedients to make it possible for these birds to carry soft food without having it crumble and fall from their bills en route to the nest. This has been difficult to accomplish--in fact it has not been completely accomplished--because of the habit which ~~these birds~~ they have of breaking things up on the ground before carrying them away, thus defeating the results sought, where the material is friable.

The attempt to keep the first brood together by establishing two feeding centers is a failure because Brownie regards m e as one of them and will find me wherever I go. Consequently if I get the young birds to come to me any place, Brownie comes and breaks up the meeting. The task ~~would~~ might be less difficult if there were not the second brood with its incessant demand for food. (?)

9:30 I tried to fool Brownie with a mirror when she just came to hand. I am sure she saw herself in it, as it was only a matter of inches from her and I moved it so she could not help getting at least glimpses of herself, as I could readily tell, but she would take only casual glances at herself. I had hoped that she might try to chase herself away, but she is evidently too wise.

At 10:00 I thought I would try to get Brownie to come into the dining room where this is being written, but much to my astonishment, the timid Greenie came instead, actually coming through the window far enough to set his feet on the floor to get the offered worm. To

be absolutely certain there was no mistake I induced him to come to me at other places where he has never been before, such as the front steps and the terrace by the dining room windows.

At 11:00 I was in the glade putting out a fresh supply of food when Brownie came and, soon after Cheeky, although he saw Brownie there before him. As soon as she spotted him the chase was on, Cheeky flying and running about me with frightened yips. Brownie chased him earnestly, but her mind was at least partially on worms, so I managed to check her on the fourth or fifth lap by displaying them, whereupon the pursuit checked and Cheeky stood about 25 feet away watching developments. When Brownie had 6 worms I flapped my hand at her to make her run to the nest, but she jumped up on it thinking it a part of the worm episode. After giving her one or two more I got her to leave and turned my attention to Cheeky who responded immediately with perfect confidence, getting his fill of both meal-worms and soft food. He is as tame as ever.

12:15. At intervals while writing the foregoing, I have paused to attend to the thrashers, inviting them to the terrace just outside the window, when I have seen them on the oval lawn below. Greenie was again the first to come. When he went back to the nest Brownie came and jumped up on my lap <u>inside</u> the dining room as I sat 3 feet from this machine. When she returned Greenie came with her and together both birds came into this room without hesitation and took worms from me as I sat exactly where I am sitting now (At the typewriter)! I have not moved from this chair since then. I have had a wild idea that I would try to get ink on Brownie's feet and get her to put her mark on one of these pages as a certificate of genuineness. I think it can be done, but there are other things in the room besides this paper.

I have not, before today, attempted to get either bird to enter the house, especially Greenie, and the explanation of their doing it so unhesitatingly is the need for food for the nestlings in

(There are now 6 eggs in the quail's nest under the helianthus. 3 were put in by Julio. 2 of the 3 originals have hatched (4:50) and the young birds have left.

4:11. Found day before yesterday. No. 40 not identified, 41st
[illegible] just being completed, the eighth this season).

2:40 Brownie has just demonstrated her prowess with snakes again, by suddenly appearing out of the bushes near nest No. 4 in the wake of thrasher a mean chick she chased and pecked for fifty feet, driving it through the fence, when she was evidently satisfied, as she quit and came to me. She did not appear much excited or very angry and pecked the snake just enough to keep him going and in the right direction, without making any outcry. This snake did not fight back when seen.

5 P.M. I have endeavored to check the color of Brownie's eyes as she was lying supine on the nest in full sun. They are an orange brown and to my eyes, nowhere as near to the shade lying between Ridgway's Hair Orange and Burnt Sienna as to anything else. (Plate II). Without bright attempting to be too exact, I would say that orange brown is a good description.

6:10. Charley came out of the chaparral to talk more from me very readily, but soon ran into the shade to eat soft food, of which he is very fond. Brownie was in the nest and would not bother him. I have seen more alike as twins today.

Tuesday 6. At 7:15 I was up and going through the [illegible] and was [illegible] of invited visitors. Brownie, however, [illegible] time out of the house.

1:55 No birds of the [illegible] yesterday to this time.

[illegible] No. 4. Brownie began taking exit [illegible] tried to get into the dining room [illegible] I got down there, but by the time I

[illegible] I [illegible] [illegible] [illegible]

She left no mark on the paper. The tile floor of this room makes it difficult to get traction for a take-off. She understands the nature of the glass in the windows now, while she will peer through it, she does not attempt to force her way through but goes to the open window directly. She does not seem to be in awe of the new surroundings, or particularly curious about them, behaving in every way just as she does outside. I am still at a loss to account for Brownie's being the first one to make this venture. He is not only timid, but independent and indifferent and sometimes will not come near me [illegible].

12:30 None of the first brood seen as yet.

1:41 I sneezed loudly just now while answering some letters, when in walked Brownie. She strolled about the room, went out into the hall and then came back and jumped up on the table. It is so smooth that her feet slip when she merely walks on it. After getting one worm she flew directly out the window, unerringly choosing the middle one of the three mullioned windows in a group, that being the only one open. I was away most of the rest of the afternoon, so made few observations.

At about 5:45 I went to the glade to replenish the food supply. No thrashers there. As I came out Brownie met me, but would not take any of the soft food offered, so I gave her worms enough for one young bird and "shooed" her toward the nest, following immediately after her. She stopped running every few feet and looked back at me (to see if I was coming?) She gave all of the worms to one bird. I then offered her soft food to see if she would refuse it again, but she was glad to get it for herself, eating eagerly as she sat on the edge of the nest. She then started giving it to the young birds and I helped her by feeding them direct. Next I handed her one worm at a time which she fed to the youngsters until she would take no more. However all of them had not received equal quantities by any means, which was what I wanted to observe. One was very much slightol, but, of course,

of the second brood